



N 85-19628

CSCI 06E

Unclas

00/52

13597

**Biology**

**SPECIAL NOTICE ENCLOSED**

**NOLOGY INDEX INCLUDED**

**SPECIAL NOTICE ENCLOSED**  
**NEW FOREIGN TECHNOLOGY INDEX INCLUDED IN THIS ISSUE**

Aerospace Medicine and Biology

Pages 27-52

March 1985



## ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)

N85-11976 - N85-13765

IAA (A-10000 Series)

A85-12657 - A85-15966

# **SPECIAL NOTICE**

## **FOREIGN TECHNOLOGY INDEX IN THIS ISSUE**

Documents referred to in this bibliography whose country of intellectual origin is other than the United States are listed in the Foreign Technology Index (see page D-1).

A great deal of excellent scientific and technical work is done throughout the world. To the extent that U.S. researchers, engineers, and industry can utilize what is done in foreign countries, we save our resources. We can thus increase our country's productivity.

We are testing out this approach by helping readers bring foreign technology into focus. We would like to know whether it is useful, and how it might be improved.

Check below, tear out, fold, staple, and return this sheet.

Foreign Technology Index:

- ☐ Isn't useful, so should be discontinued.
- ☐ Is useful, but other sources can be used.
- ☐ Is useful and should be continued.
- ☐ Suggestions for improvements to future issues:

---

---

---

---

Name (optional)\_\_\_\_\_

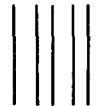
Organization (optional)\_\_\_\_\_

**National Aeronautics and  
Space Administration**

**Washington, D.C.  
20546**

**Official Business  
Penalty for Private Use, \$300**

**FIRST CLASS MAIL**



**Postage and Fees Paid  
National Aeronautics and  
Space Administration  
NASA-451**

**National Aeronautics & Space Administration  
NASA Headquarters Mail Code NIT-2  
Washington, D.C. 20546**

**NASA**



# **AEROSPACE MEDICINE AND BIOLOGY**

## **A CONTINUING BIBLIOGRAPHY WITH INDEXES**

**(Supplement 269)**

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in February 1985 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*



Scientific and Technical Information Branch

1985

**National Aeronautics and Space Administration**

Washington, DC

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This supplement is available as NTISUB/123/093 from the National Technical Information Service (NTIS), Springfield, Virginia 22161 at the price of \$7.00 domestic; \$14.00 foreign.



# INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* lists 180 reports, articles and other documents announced during February 1985 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the Earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged by *STAR* categories 51 through 55, the Life Sciences division. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. The *IAA* items will precede the *STAR* items within each category.

Six indexes -- subject, personal author, corporate source, contract, report number, and accession number -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1984 Supplements.

# AVAILABILITY OF CITED PUBLICATIONS

## IAA ENTRIES (A85-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at \$8.50 per document. Microfiche<sup>(1)</sup> of documents announced in *IAA* are available at the rate of \$4.00 per microfiche on demand. Standing order microfiche are available at the rate of \$1.45 per microfiche for *IAA* source documents.

Minimum air-mail postage to foreign countries is \$2.50 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

## STAR ENTRIES (N85-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code preceded by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

**NOTE ON ORDERING DOCUMENTS:** When ordering NASA publications (those followed by the \* symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, as indicated above, for those documents identified by a # symbol.)

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Document Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26.1 reduction).



- Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.
- Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.
- Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.
- Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.
- Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)
- Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).
- Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.
- Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.
- Avail: ESDU. Pricing information on specific data, computer programs, and details on ESDU topic categories can be obtained from ESDU International Ltd. Requesters in North America should use the Virginia address while all other requesters should use the London address, both of which are on page vii.
- Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

## **PUBLIC COLLECTIONS OF NASA DOCUMENTS**

**DOMESTIC:** NASA and NASA-sponsored documents and a large number of aerospace publications are available to the public for reference purposes at the library maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

**EUROPEAN:** An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England for public access. The British Library Lending Division also has available many of the non-NASA publications cited in *Star*. European requesters may purchase facsimile copy or microfiche of NASA and NASA-sponsored documents, those identified by both the symbols # and \* from ESA - Information Retrieval Service European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

## **FEDERAL DEPOSITORY LIBRARY PROGRAM**

In order to provide the general public with greater access to U.S. Government publications, Congress established the Federal Depository Library Program under the Government Printing Office (GPO), with 50 regional depositories responsible for permanent retention of material, inter-library loan, and reference services. Over 1,300 other depositories also exist. A list of the regional GPO libraries appears on the inside back cover.



## ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics and  
Astronautics  
Technical Information Service  
555 West 57th Street, 12th Floor  
New York, New York 10019

British Library Lending Division,  
Boston Spa, Wetherby, Yorkshire,  
England

Commissioner of Patents and  
Trademarks  
U.S. Patent and Trademark Office  
Washington, D.C. 20231

Department of Energy  
Technical Information Center  
P.O. Box 62  
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service  
ESRIN  
Via Galileo Galilei  
00044 Frascati (Rome) Italy

ESDU International, Ltd.  
1495 Chain Bridge Road  
McLean, Virginia 22101

ESDU International, Ltd.  
251-259 Regent Street  
London, W1R 7AD, England

Fachinformationszentrum Energie, Physik,  
Mathematik GMBH  
7514 Eggenstein Leopoldshafen  
Federal Republic of Germany

Her Majesty's Stationery Office  
P.O. Box 569, S.E. 1  
London, England

NASA Scientific and Technical Information  
Facility  
P.O. Box 8757  
B.W.I. Airport, Maryland 21240

National Aeronautics and Space  
Administration  
Scientific and Technical Information  
Branch (NIT-1)  
Washington, D.C. 20546

National Technical Information Service  
5285 Port Royal Road  
Springfield, Virginia 22161

Pendragon House, Inc.  
899 Broadway Avenue  
Redwood City, California 94063

Superintendent of Documents  
U.S. Government Printing Office  
Washington, D.C. 20402

University Microfilms  
A Xerox Company  
300 North Zeeb Road  
Ann Arbor, Michigan 48106

University Microfilms, Ltd.  
Tylers Green  
London, England

U.S. Geological Survey Library  
National Center – MS 950  
12201 Sunrise Valley Drive  
Reston, Virginia 22092

U.S. Geological Survey Library  
2255 North Gemini Drive  
Flagstaff, Arizona 86001

U.S. Geological Survey  
345 Middlefield Road  
Menlo Park, California 94025

U.S. Geological Survey Library  
Box 25046  
Denver Federal Center, MS 914  
Denver, Colorado 80225

# NTIS PRICE SCHEDULES

## Schedule A STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1983)

| Price Code | Page Range | North American Price | Foreign Price |
|------------|------------|----------------------|---------------|
| A01        | Microfiche | \$ 4.50              | \$ 9.00       |
| A02        | 001-025    | 7.00                 | 14.00         |
| A03        | 026-050    | 8.50                 | 17.00         |
| A04        | 051-075    | 10.00                | 20.00         |
| A05        | 076-100    | 11.50                | 23.00         |
| A06        | 101-125    | 13.00                | 26.00         |
| A07        | 126-150    | 14.50                | 29.00         |
| A08        | 151-175    | 16.00                | 32.00         |
| A09        | 176-200    | 17.50                | 35.00         |
| A10        | 201-225    | 19.00                | 38.00         |
| A11        | 226-250    | 20.50                | 41.00         |
| A12        | 251-275    | 22.00                | 44.00         |
| A13        | 276-300    | 23.50                | 47.00         |
| A14        | 301-325    | 25.00                | 50.00         |
| A15        | 326-350    | 26.50                | 53.00         |
| A16        | 351-375    | 28.00                | 56.00         |
| A17        | 376-400    | 29.50                | 59.00         |
| A18        | 401-425    | 31.00                | 62.00         |
| A19        | 426-450    | 32.50                | 65.00         |
| A20        | 451-475    | 34.00                | 68.00         |
| A21        | 476-500    | 35.50                | 71.00         |
| A22        | 501-525    | 37.00                | 74.00         |
| A23        | 526-550    | 38.50                | 77.00         |
| A24        | 551-575    | 40.00                | 80.00         |
| A25        | 576-600    | 41.50                | 83.00         |
| A99        | 601-up     | - 1                  | - 2           |

1/ Add \$1.50 for each additional 25 page increment or portion thereof for 601 pages up.

2/ Add \$3.00 for each additional 25 page increment or portion thereof for 601 pages and more.

## Schedule E EXCEPTION PRICE SCHEDULE Paper Copy & Microfiche

| Price Code | North American Price | Foreign Price |
|------------|----------------------|---------------|
| E01        | \$ 6.50              | \$ 13.50      |
| E02        | 7.50                 | 15.50         |
| E03        | 9.50                 | 19.50         |
| E04        | 11.50                | 23.50         |
| E05        | 13.50                | 27.50         |
| E06        | 15.50                | 31.50         |
| E07        | 17.50                | 35.50         |
| E08        | 19.50                | 39.50         |
| E09        | 21.50                | 43.50         |
| E10        | 23.50                | 47.50         |
| E11        | 25.50                | 51.50         |
| E12        | 28.50                | 57.50         |
| E13        | 31.50                | 63.50         |
| E14        | 34.50                | 69.50         |
| E15        | 37.50                | 75.50         |
| E16        | 40.50                | 81.50         |
| E17        | 43.50                | 88.50         |
| E18        | 46.50                | 93.50         |
| E19        | 51.50                | 102.50        |
| E20        | 61.50                | 123.50        |

E-99 - Write for quote

|     |       |       |
|-----|-------|-------|
| N01 | 35.00 | 45.00 |
|-----|-------|-------|

# TABLE OF CONTENTS

|  | <b>Page</b> |
|--|-------------|
| <b>Category 51 Life Sciences (General)</b><br>Includes genetics.   | <b>27</b>   |
| <b>Category 52 Aerospace Medicine</b><br>Includes physiological factors; biological effects of radiation; and weightlessness.                                    | <b>36</b>   |
| <b>Category 53 Behavioral Sciences</b><br>Includes psychological factors; individual and group behavior; crew training and evaluation; and psychiatric research. | <b>45</b>   |
| <b>Category 54 Man/System Technology and Life Support</b><br>Includes human engineering; biotechnology; and space suits and protective clothing.                 | <b>47</b>   |
| <b>Category 55 Planetary Biology</b><br>Includes exobiology; and extraterrestrial life.  | <b>51</b>   |
| <b>Subject Index .....</b>   | <b>A-1</b>  |
| <b>Personal Author Index .....</b>   | <b>B-1</b>  |
| <b>Corporate Source Index .....</b>  | <b>C-1</b>  |
| <b>Foreign Technology Index .....</b>  | <b>D-1</b>  |
| <b>Contract Number Index .....</b>   | <b>E-1</b>  |
| <b>Report Number Index .....</b>   | <b>F-1</b>  |
| <b>Accession Number Index .....</b>  | <b>G-1</b>  |

## TYPICAL CITATION AND ABSTRACT FROM STAR

|                         |  |   |                         |
|-------------------------|--|---|-------------------------|
| NASA SPONSORED DOCUMENT |  |   | AVAILABLE ON MICROFICHE |
| NASA ACCESSION NUMBER   | N85-11521*#  | Research Triangle Inst., Research Triangle Park, N.C. | CORPORATE SOURCE        |
| TITLE                   | APPLICATIONS OF AEROSPACE TECHNOLOGY IN BIOLOGY AND MEDICINE Final Report  |   |                         |
| AUTHORS                 | B. BASS, H. C. BEALL, J. N. BROWN, JR., W. H. CLINGMAN, R. E. EAKES, P. N. KIZAKEVICH, M. MCCARTNEY, and D. J. ROUSE |   |                         |
| REPORT NUMBER           | Apr. 1982 132 p<br>(Contract NAS1-16177)<br>(NASA-CR-165872; NAS 1.26:165872)  |   |                         |
| AVAILABILITY SOURCE     | Avail: NTIS HC A07/MF<br>A01 CSCL 06B  |   |                         |
|                         | COSATI CODE  |   |                         |

Utilization of National Aeronautics and Space Administration (NASA) technology in medicine is discussed. The objective is best obtained by stimulation of the introduction of new or improved commercially available medical products incorporating aerospace technology. A bipolar donor/recipient model of medical technology transfer is presented to provide a basis for the team's methodology. That methodology is designed to: (1) identify medical problems and NASA technology that, in combination, constitute opportunities for successful medical products; (2) obtain the early participation of industry in the transfer process; and (3) obtain acceptance by the medical community of new medical products based on NASA technology. Two commercial transfers were completed: the Stowaway, a lightweight wheelchair that provides mobility for the disabled and elderly in the cabin of commercial aircraft, and Micromed, a portable medication infusion pump for the reliable, continuous infusion of medications such as heparin or insulin. The marketing and manufacturing factors critical to the commercialization of the lightweight walker incorporating composite materials were studied. Progress was made in the development and commercialization of each of the 18 currently active projects.

E.A.K.

## TYPICAL CITATION AND ABSTRACT FROM IAA

|                       |  |   |       |
|-----------------------|--|---|-------|
| AIAA ACCESSION NUMBER | A85-10422  | THE ELECTRICAL STIMULATION OF A VESTIBULAR ANALYZER DURING THE PHOTOELECTRIC RECORDING OF EYE MOVEMENTS [ELEKTRICHESKAIA SFIMULIATSIA VESTIBULIARNOGO ANALIZATORA V USLOVIAKH FOTOELEKTRICHESKOI REGISTRATSII DVIZHENII GLAZ] | TITLE |
| AUTHORS               | S. N. KHECHINASHVILI, B. M. ZARGARIAN, and K. G. KARAKOZOV (Ministerstvo Zdravookhraneniia SSSR, Institut Usovershenstvovaniia Vrachei, Tbilisi, Georgian SSR) |   |       |
| TITLE OF PERIODICAL   | Vestnik Otorinolaringologii (ISSN 0042-4668), Sept.-Oct., 1984, p. 3-7. In Russian. refs   |   |       |
|                       | AUTHOR'S AFFILIATION   |   |       |
|                       | PUBLICATION DATE   |   |       |

Electrostimulators and electronystagmographs are used for clinical studies of the effectiveness of vestibular analyzers. In experiments with a VV-II analyzer, the linearity of the nystagmus parameters determined by the analyzer corresponded to a range of eye movements from 0.5 to 8 degrees. The use of infrared light has made it possible to conduct experiments in complete darkness. It is found that tightly-bound fibers in the device completely eliminated the caloric effects of infrared radiation in the eye. The most important characteristics of the galvanic nystagmus are found to be the rate of the slow phase and frequency.

I.H.



# AERONAUTICAL ENGINEERING

*A Continuing Bibliography (Suppl. 269)*

MARCH 1985

51

## LIFE SCIENCES (GENERAL)

Includes genetics.

**A85-13103\*** # National Aeronautics and Space Administration, Washington, D. C.

**THE FIRST DEDICATED LIFE SCIENCES SPACELAB MISSION**  
T. W. PERRY, J. A. RUMMEL (NASA, Washington, DC), L. D. GRIFFITHS, R. J. WHITE, and J. I. LEONARD (GE Management and Technical Services Co., Houston, TX) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 23 p. refs (Contract NASW-3676; NAS9-15850) (IAF PAPER 84-170)

It is pointed out that the Shuttle-borne Spacelab provides the capability to fly large numbers of life sciences experiments, to retrieve and rescue experimental equipment, and to undertake multiple-flight studies. A NASA Life Sciences Flight Experiments Program has been organized with the aim to take full advantages of this capability. A description is provided of the scientific aspects of the most ambitious Spacelab mission currently being conducted in connection with this program, taking into account the First Dedicated Life Sciences Spacelab Mission. The payload of this mission will contain the equipment for 24 separate investigations. It is planned to perform the mission on two separate seven-day Spacelab flights, the first of which is currently scheduled for early 1986. Some of the mission objectives are related to the study of human and animal responses which occur promptly upon achieving weightlessness. G.R.

**A85-13104\*** #

**GENERAL CONFIGURATION OF THE SPACELAB MISSION D1 FROG STATOLITH EXPERIMENT-STATEX**

J. NEUBERT, W. BRIEGLEB, A. SCHATZ (Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Institut fuer Flugmedizin, Cologne, West Germany), and P. JUNK (ERNO Raumfahrttechnik GmbH, Bremen, West Germany) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 4 p. refs (IAF PAPER 84-172)

An experiment to study the effect of gravitational forces on embryogenesis and organ development in animals is discussed. In the STATEX (Frog Statolith Experiment) project, to be performed during Spacelab Mission D1, the early stages of developing frogs will be used to obtain detailed information about the formation and function of the gravity sensory system in vertebrates. In this paper, the configuration of the STATEX equipment is described. C.D.

**A85-13105\*** #

**POSSIBLE MECHANISMS OF CELL ADAPTATION TO HYPOGRAVITY**

E. L. KORDIUM, K. M. SYTNIK, N. A. BELIAVSKAIA, E. M. NEDUKHA, L. I. MUSATENKO, and V. A. TARASENKO (Ukrainian Academy of Sciences, Institute of Botany, Kiev, Ukrainian SSR) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 8 p. refs

(IAF PAPER 84-173)

The biochemical alterations in vegetative cells in response to microgravity are discussed in terms of enhanced Ca concentrations in cell membranes and associated processes. A significant decrease was observed in Ca<sup>2+</sup>(+)-ATPase activity in pea seedling root cytoplasmic membranes during experiments on Salyut-6. The Ca ions are assumed to have become bound in the membranes, which may have an altered potential and in any case become thinner and contain larger starch grains relative to membranes in higher gravity conditions. The membranes also become a depot for phytoferritin in the plastids. The disturbances on the Ca balances are attributed to changes in the functional load of cell organelles, composition and enzyme activity (particularly dehydrogenases). Further trials are recommended to determine the tolerance of the plants to the changes. M.S.K.

**A85-13109\*** #

**INFLUENCE OF IMMOBILIZATION AND WEIGHTLESSNESS ON BONE TISSUE**

P. MINAIRE (Saint-Etienne, Centre Hospitalier Regional Universitaire, Saint-Etienne, France), C. ALEXANDRE, D. CHAPPARD, G. RIFFAT (Saint-Etienne, Centre Hospitalier Regional Universitaire, Saint-Priest-en-Jarez, Loire, France), and G. PILONCHERY (Hopital Henry Gabrielle, Saint-Genis-Laval, Rhone, France) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 11 p. refs (IAF PAPER 84-177)

Immobilization and weightlessness modify the function of the bone cells, and disturb the calcium metabolism. Cellular changes occur early and, in case of prolonged unloading of the bones, result in a major bone loss. This loss is greater in younger individuals, with marked changes in the calcium metabolism, leading in particular to hypercalcemia. The acuteness of this bone loss is explained by the unusual association of an increased bone resorption and a decreased bone formation. The reversibility of the bone loss seems unlikely after 6 months of immobilization or weightlessness: Initial local or general vascular changes, and insufficient mechanical stimulation account mainly for these bone cell disturbances. Author

**A85-13111\*#** National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.  
**SPACELAB 1 AND THE LIFE SCIENCES FLIGHT EXPERIMENTS PROGRAM**

W. H. BUSH and R. S. CLARK (NASA, Johnson Space Center, Houston, TX) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 16 p. refs  
 (IAF PAPER 84-183)

The Life Sciences Flight Experiments Program (LSFEP) was established by NASA in 1978 to plan and direct efforts necessary to conduct a continuing program of in-flight life science investigations throughout the Space Shuttle era. The Spacelab 1 (SL-1) mission, conducted from November 28 to December 8, 1983, was to verify Spacelab performance through a variety of scientific experiments including life science. A description is given of the seven NASA life sciences experiments, which consisted of four human experiments, a fungus experiment, a plant experiment, and radiation experiments. Ten life sciences experiments from the European Space Agency were also flown. The experiments include studies of the circadian rhythms in *Neurospora crassa*, the nutation of *Helianthus annuus*, the vestibular function during weightlessness, the influence of space flight on erythrokinetics in man, and the adaptation of vestibulo-spinal reflex mechanisms during space flight. G.R.

**A85-13114\*#** National Aeronautics and Space Administration, Washington, D. C.  
**ASSESSMENT OF MEDICAL RISK IN SPACE FLIGHT**

A. NICOGLOSSIAN, P. RAMBAUT, and S. POOL (NASA, Washington, DC) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 5 p. refs  
 (IAF PAPER 84-189)

Among the various manned space missions expected during the next 10 years are flights of up to 6 months duration in low earth orbit as well as short excursions to geosynchronous orbit. Research activities are described which cover the full spectrum of physiological and psychological problems presented by such flights as well as by ongoing Shuttle flights. This paper includes a summary of the major technical thrusts needed for habitation in space. It concludes that there is a high probability of developing countermeasures that will alleviate the neurophysiological and cardiovascular effects encountered during Shuttle flights and that the resolution of musculoskeletal, psychological and radiobiological problems will also prove possible. Author

**A85-13292#**  
**A HYDROPONIC METHOD FOR PLANT GROWTH IN MICROGRAVITY**

B. D. WRIGHT International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 6 p. refs  
 (IAF PAPER 84-ST-05)

A theory and initial results from tests of a hydroponic system for a weightless environment are reported. The capillary effect root environment system (CERES) comprises roots covered with a membrane below which water is circulated through a permeable membrane. The pressure near the root is maintained lower than atmospheric to seal in the water. The absorptive characteristics of roots encourage the formation of a water film near the root. The pressure drop above and below the membrane is expressed by the Hagen-Poiseuille equation for laminar flow. Laboratory experiments with a bed of 12 tomato plants showed good root hair growth and root branching after 19 days. Further tests to identify biofouling control techniques which would be effective in operational conditions in space are indicated. M.S.K.

**A85-13300**

**THE EFFECT OF THE PARTIAL DEPRIVATION OF SLOW-WAVE SLEEP ON THE SLEEP-WAKEFULNESS CYCLE [VLIANIE CHASTICHNOI DEPRIVATSII MEDLENNOVOLNOVOGO SNA NA STRUKTURU TSIKLA BODRSTVOVANIE-SON]**

T. N. ONIANI, E. O. CHIDZHAVADZE, and L. M. MAISURADZE (Akademiia Nauk Gruzinskoi SSR, Institut Fiziologii, Tbilisi, Georgian SSR) Fiziologicheskii Zhurnal SSSR (ISSN 0015-329X), vol. 70, Aug. 1984, p. 1142-1148. In Russian. refs

In an experimental investigation of cat sleep-wakefulness cycles, it is shown that partial (35 to 55 percent) deprivation of slow-wave sleep by electrical stimulation of the brain-stem activating structures can lead to an enhancement of behavioral sleep and a reduction of paradoxical sleep. The reduction of paradoxical sleep was particularly noticeable when the deprivation of slow-wave sleep was induced by fragments of behavioral EEG wakefulness. In this situation no return to paradoxical sleep was observed in the postdeprivation period. The interrelationships of different phases of the sleep-wakefulness cycle are examined, as well as the interaction of EEGs and the behavioral mechanisms of sleep and wakefulness. I.H.

**A85-13458**

**INVESTIGATION OF INTRINSIC TEMPERATURE FIELDS CONNECTED WITH THE EXCITATION OF THE RAT CEREBRAL CORTEX [ISSLEDOVANIE SOBSTVENNYKH TEMPERATURNYKH POLEI, SVIAZANNYKH S VOZBUZHDENIEM KORY BOL'SHOGO MOZGA KRYSY]**

E. N. TSYKALOV, A. V. PETROV, A. M. TARATORIN, G. D. KUZNETSOVA, and V. I. KOROLEVA (Akademiia Nauk SSSR, Institute Vysshego Nervnoi Deiatel'nosti Neurofiziologii and Institut Radiotekhniki i Elektroniki, Moscow, USSR) Akademiia Nauk SSSR, Doklady (ISSN 0002-3264), vol. 278, Sept.-Oct. 1984, p. 249-252. In Russian. refs

**A85-13462**

**INFLUENCE OF CONTINUOUS HYPO- AND HYPERKINESIA ON EEG-RHYTHMS IN THE RANGE OF 0.5 TO 35 HZ IN RATS**

L. P. CHERESHAROV, N. D. NIKOLOV, V. KH. STOMONIAKOV, and M. BOEV (B'lgarska Akademiia na Naukite, Tsentralna Laboratoriia za izuchavane na Moz'ka, Sofia, Bulgaria) Bolgarskaia Akademiia Nauk, Doklady (ISSN 0366-8681), vol. 36, no. 10, 1983, p. 1339-1342. refs

Variation in the EEG rhythms (from 0.5 to 35 MHz) of rats as a result of continuous hyper- or hypokinesia is investigated experimentally. Variations were measured in the visual and somatomotor cortices the mesencephalic locomotor zone, and in the hippocampus in eleven test animals. Separate recordings were performed five times daily throughout the 25 days of the study, and a total of 425 power spectra were analyzed under wakeful, immobilized, motor-loaded and control conditions. Histograms are presented of the percentage distribution of the rhythms. On the basis of differences in the percentage distributions of it is found that basic variations in EEG rhythm takes place in the high frequency region from 24 to 35 MHz. Hypokinesia resulted in a marked accumulation of rhythms in the visual and somatomotor cortices. I.H.

**A85-13613\*** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

**THE UNRESPONSIVENESS OF THE IMMUNE SYSTEM OF THE RAT TO HYPERGRAVITY**

S. M. SCIBETTA, L. D. CAREN, and J. OYAMA (NASA, Ames Research Center, Biomedical Research Div., Moffett Field; Santa Clara, University, Santa Clara, CA) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1004-1009. refs

The immune response in rats exposed to simulated hypergravity (2.1 G and 3.1 G) by chronic centrifugation was assessed. Rats were immunized with sheep red blood cells (SRBC), either on the day of initial exposure to hypergravity (hyper-G), or after being centrifuged for 28 d and remaining on the centrifuge thereafter. Pair-fed and ad libitum fed noncentrifuged controls were used.

Although there were some alterations in leukocyte counts, hyper-G did not systematically affect the primary or secondary anti-SRBC response, hematocrits, or the sizes of the liver, spleen, kidneys, thymus, or adrenal glands. The immune system is thus remarkably homeostatic under hypergravity conditions which do affect other physiologic parameters. Author

**A85-13615****APPLICATION OF THE COMPARTMENTALIZATION/AIRLOCK CONCEPT TO AIRCRAFT AND TOLERANCE OF LUNG TO RAPID DECOMPRESSION**

H. S. FANG (College of Medicine, Taipei, Republic of China) and Y. N. CHANG (National Taiwan University, Taipei, Republic of China) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1015-1019. Sponsorship: National Science Council of the Republic of China. refs (Contract NSC-72-0412-B002-22)

The incidence of pulmonary hemorrhage of different laboratory animals undergoing rapid decompression was found to be markedly decreased by applying the compartmentalization/airlock concept to simulated pressurized aircraft. It was observed that, in protected rabbit, mouse, and rat lungs, 6 of 24 (25 percent), 7 of 24 (29 percent), and 6 of 24 (25 percent), respectively, exhibited a few petechial hemorrhages following rapid decompression. In unprotected animals, however, all 72 lungs showed slight-to-very-severe degrees of decompression-induced hemorrhages. The percent of mortality of the unprotected animals undergoing rapid decompression was 47 percent, while there were no deaths in protected animals. The incidence of such pulmonary hemorrhages and the mortality of experimental animals indicate that compartmentalization, combined with an adequate airlock, would be of great value in protection against accidental decompression of pressurized aircraft. Author

**A85-13619****INCREASED SUSCEPTIBILITY TO RADIOFREQUENCY RADIATION DUE TO PHARMACOLOGICAL AGENTS**

J. R. JAUCHEM, M. R. FREI, and F. HEINMETS (Technology, Inc., Life Sciences Div.; Trinity University, San Antonio, TX) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1036-1040. refs (Contract F33615-80-C-0614)

The effects of chlorpromazine, methysergide, and propranolol on thermal responses to 2.8 GHz radiofrequency radiation were examined in anesthetized rats. During intermittent exposure at an average power density of 60 mW/sq cm (specific absorption rate, 14 W/kg), when colonic temperature was not allowed to rise above 39.5 C, none of the pharmacological agents had any significant effects on thermal responses. When exposure was continued until lethal temperatures resulted, animals which were administered chlorpromazine, methysergide, or propranolol exhibited significantly shorter survival times than saline-treated animals. Propranolol administration caused the greatest decrease in survival time and resulted in a significantly lower lethal temperature than that which occurred in saline-treated animals. Author

**A85-13620****CANINE POSTRADIATION HISTAMINE LEVELS AND SUBSEQUENT RESPONSE TO COMPOUND 48/80**

L. G. COCKERHAM, T. F. DOYLE, M. A. DONLON, and E. A. HELGESON (U.S. Army, Radiobiology Research Institute, Bethesda, MD) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1041-1045. Research supported by the U.S. Defense Nuclear Agency and U.S. Army. refs

Radiation-induced hypotension in the beagle is accompanied by increased intestinal blood flow (IBF) and hematocrit (HCT). This study was performed to correlate these radiation-induced changes with plasma histamine (PH) levels following radiation. The histamine (H) levels were monitored in the systemic arterial circulation (SA) and the hepatic portal vein (HPV) before and after radiation. To examine the effect of radiation on the mobilization of total body H stores, Compound 48/80 was given I.V., and H

responses were monitored in both control and radiated animals. Data obtained indicated that 100 Gy, whole-body, gamma-radiation produced a decrease in systemic mean blood pressure (BP), an increase in IBF and an increase in HCT. Concurrently, the mean PH/SA values increased and the PH/HPV levels decreased. Compound 48/80 produced a marked increase in PH levels in both control and radiated animals; however, the levels found in the radiated animals were consistently lower than those in the controls, although not statistically different. This implies that H may mediate these observed intestinal responses and that the mobility of histamine is decreased in radiated animals. Author

**A85-13621****ORIGIN OF EYE MOVEMENTS INDUCED BY HIGH FREQUENCY ROTATION OF THE HEAD**

J.-L. VERCHER, G. M. GAUTHIER, E. MARCHETTI, P. MANDELBJOJT, and Y. EBHARA (Aix-Marseille I, Universite, Marseille, France) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1046-1050. refs

In subjects submitted to high frequency vibration, perception of stability of the visual world and control of the oculomotor system are severely altered. It has been suspected that inappropriate compensatory eye movements are, at least in part, responsible for the observed alterations. The present investigation has the objective to determine whether high amplitude eye oscillations were due to a nonlinearity of the vestibulo-ocular system or to a mechanical resonance of the eyeballs, taking into account a series of experiments conducted on baboons. The obtained results show that the high amplitude eye movements induced by high frequency head rotation or vibration are due to a biomechanical resonance of the orbital apparatus. G.R.

**A85-13624****THE IMMUNE SYSTEM - EFFECTS OF HYPERGRAVITY AND HYPOGRAVITY**

R. P. BARONE and L. D. CAREN (Santa Clara, University, Santa Clara, CA) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1063-1068. refs

The assessment of the biological effects of gravity is important both for theoretical understanding and for practical application in the space program. The present investigation is concerned with the effects of altered gravitational fields on the immune system. The considered subject is of particular importance to the space program and a proposed manned space station, since the immune system enables the body to resist disease. Tests of the effects of hyper-G on the immune system are discussed, and a description is provided of the effects of hyper-G on various aspects of the immune system. Attention is given to the effects on lymphocyte number, the effects on mitogen-stimulated cell cultures, the effects on nonspecific immunity, and the effects on humoral immunity. Effects of hypo-G on the immune system are also explored. G.R.

**A85-13800****COMBINED EFFECT OF NONUNIFORM MICROWAVE (2.4 GHZ) AND GAMMA RADIATION ON THE BLOOD-BRAIN BARRIER IN RATS [KOMBINIROVANNOE DEISTVIE NERAVNOMERNOGO MIKROVOLNOVOGO /2,4 GGTS/ I GAMMA-OBLUCHENII NA GEMATOENTSEFALICHESKII BAR'ER KRYSI]**

I. B. USHAKOV and V. G. ZUEV Akademiia Nauk SSSR, Izvestiia, Seriia Biologicheskaiia (ISSN 0002-3329), no. 5, Oct. 1984, p. 795-797. In Russian. refs

**A85-13820****INVESTIGATION OF FERTILITY AND IN UTERO EFFECTS IN RATS CHRONICALLY EXPOSED TO A HIGH-INTENSITY 60-HZ ELECTRIC FIELD**

D. MAJEAU-CHARGOIS, W. P. DUNLAP, C. F. WALKER, S. T. HSIEH (Tulane University, New Orleans, LA), J. R. LYMAN-GROVER (Wake Forest University, Winston-Salem, NC), and Y. J. SETO IEEE Transactions on Biomedical Engineering (ISSN 0018-9294), vol. BME-31, Nov. 1984, p. 693-702. refs

A85-14123

**THE REGULATION OF CEREBRAL CIRCULATION [REGULIATSIIA MOZGOVOGO KROVOOBRAZHCHENIIA]**

V. M. UGRIUMOV, S. I. TEPOV, and G. S. TIGLIEV Leningrad, Izdatel'stvo Meditsina, 1984, 136 p. In Russian. refs

The achievements of the A.L. Polenov Neurosurgical Institute in the clinical investigation of the regulatory mechanism of cerebral circulation are reviewed. Emphasis is given to the development of techniques for measuring cerebral blood flow and for monitoring brain metabolism during surgery. Thermographic instruments used for quantitative measurements of local cerebral blood flow are described, and several practical recommendations are offered for preventing pathological disturbances in brain blood circulation (aneurisms, hemorrhages) during or following surgery. I.H.

A85-14598

**THE STABLE PATHOLOGICAL STATE AND THE PATHOLOGICAL SYSTEM [USTOICHIVOE PATOLOGICHESKOE SOSTOIANIE I PATOLOGICHESKAIA SISTEMA]**

G. N. KRYZHANOVSKII (Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR) Fiziologiya Cheloveka (ISSN 0131-1646), vol. 10, Sept.-Oct. 1984, p. 786-795. In Russian. refs

Bekhtereva's concept of the stable pathological state (SPS) is compared with Kryzhanovskii's concept of the pathological system (PS) with respect to nature, mechanisms of formation, and distinctive features. The SPS is a complex of mechanisms of brain adaptation to pathological changes which assures a distinctive homeostasis and makes it possible to perform activities in a mode that is optimal for given conditions; while the PS is the fundamental pathogenetic mechanism for the development of the pathological process. It is concluded that the SPS evidently arises as the mechanism of adaptation to a stable PS. B.J.

A85-14628

**THE NEURONS OF THE VISUAL CORTEX - ADAPTIVITY AND THE DYNAMICS OF RECEPTIVE FIELDS [NEIRONY ZRITEL'NOI KORY: ADAPTIVNOST' I DINAMIKA RETSEPTIVNYKH POLEI]**

I. A. SHEVELEV Moscow, Izdatel'stvo Nauka, 1984, 232 p. In Russian. refs

The results of a number of studies of the physiological characteristics of the neurons of the visual cortex of the brain are presented. A basic description of the organization of neuronal functions in the visual cortex is given with emphasis on the role of adaptivity to visual and nonvisual stimuli. Some of the physiological and psychological aspects of the process of recognition and identification of forms are discussed with reference to results from several clinical and experimental investigations. I.H.

A85-14634

**WATER-SALT HOMEOSTASIS IN CASES OF CIRCULATORY INSUFFICIENCY [VODNO-SOLEVOI GOMEOSTAZ PRI NEDOSTATOCHNOSTI KROVOOBRAZHCHENIIA]**

I.A. IU. BAGROV Leningrad, Izdatel'stvo Nauka, 1984, 176 p. In Russian. refs

The current status of clinical and experimental research concerning the physiological aspects of water-salt homeostasis in patients with insufficient circulatory function is reviewed. Attention is given to the neurohormonal and tissue-related aspects of hyperhydration and salt retention and their role in some types of circulatory disease (edemas and congestive heart failure). The effects of preparations of aldosterone and vasopressin on the mechanisms of salt excretion are discussed, and the various surgical techniques for improving salt excretion are described, with reference to both clinical and experimental data. I.H.

A85-14635

**BIOPHYSICAL MECHANISMS IN THE FORMATION OF ELECTROENCEPHALOGRAMS [BIOFIZICHESKIE MEKHAIZMY ELEKTROENTSEFALOGRAMMY]**

M. N. ZHADIN Moscow, Izdatel'stvo Nauka, 1984, 200 p. In Russian. refs

The basic biophysical theories concerning the morphological characteristics of electroencephalograms (EEGs) and electrocorticograms (EKGs) are discussed. A correlation is established between the statistical characteristics of electroencephalograms and the activity of the cells of the external cortex of the brain. Several current models of brain electrical functions are described. I.H.

A85-14652

**ISOPROTERENOL INFUSION PROMOTES NITROGEN WASHOUT IN RATS UNDER NORMOBARIC CONDITIONS**

G. W. MACK and Y. C. LIN (Hawaii, University, Honolulu, HI) Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1306-1311. Research supported by the Hawaii Heart Association. refs

(Contract NOAA-NA-81AAD00070)

A major limitation regarding the human ability to tolerate exposure to hyperbaric environments is related to the threat of inappropriate decompression leading to decompression sickness. Avoidance of decompression sickness can be achieved by following a specific program of pressure-reduction steps. The duration of stay at each stage of decompression varies directly with the rate of inert gas elimination. One approach to shorten decompression time involves an increase in the rate of inert gas elimination. The current investigation has the objective to establish the relationship between cardiac output and inert gas elimination. The kinetics of gas washout are examined. The conducted experiments demonstrate that isoproterenol-enhanced cardiac output promotes inert gas elimination from the lungs and slow tissue compartments. G.R.

A85-14654

**ACUTE CARDIORESPIRATORY RESPONSES OF HYPERTENSIVE RATS TO SWIMMING AND TREADMILL EXERCISE**

M. L. STUREK, T. G. BEDFORD, C. M. TIPTON, and L. NEWCOMER (Iowa, University, Iowa City, IA) Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1328-1332. refs

A85-14656

**EFFECTS OF CO<sub>2</sub> AND BRONCHOCONSTRICTION ON COSTAL AND CRURAL DIAPHRAGM ELECTROMYOGRAMS**

E. VAN LUNTEREN, M. A. HAXHIU, E. C. DEAL, JR., D. PERKINS, and N. S. CHERNIACK (Case Western Reserve University; U.S. Veterans Administration, Medical Center, Cleveland, OH) Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1347-1353. Research supported by the U.S. Veterans Administration. refs (Contract NIH-HL-07288; NIH-HL-25830)

The diaphragm is a thin, flat, musculotendinous structure separating the thoracic and abdominal cavities. De Troyer et al. (1981, 1982) have described separate actions for two parts of the diaphragm, including the costal part and the crural diaphragm. The present study had the objective to examine the effects of heightened drives to breathe on the electrical activity of the costal and crural diaphragm. Anesthetized dogs were employed in studies conducted during resting breathing and two forms of stimulated breathing. The obtained results extend previous observations indicating that the control of the costal and crural diaphragm motoneuron pools is different. The present data suggest that the crural diaphragm is particularly responsive to the vagal excitatory input produced by histamine inhalation. G.R.

A85-14657

**EFFECTS OF AGE ON METABOLIC RESPONSES TO ENDURANCE TRAINING IN RATS**

R. S. MAZZEO, G. A. BROOKS, and S. M. HORVATH (California, University, Santa Barbara; California, University, Berkeley, CA) *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1369-1374. refs

(Contract NIH-AG-00073-05)

It has been found that a number of cardiovascular variables decline with age, in particular, when the organism is challenged by physical stress. The observed responses include decreases in maximal oxygen consumption, coronary blood flow, capillary/fiber ratio, cardiac output, and mitochondrial function. Studies have been conducted regarding the beneficial effects of endurance training on such cardiovascular functions in relatively young populations. However, questions remain with respect to similar training adaptations in individuals of advanced age. The present investigation has the objective to determine and compare the metabolic responses to endurance training in rats 3, 12, and 24 months of age. The obtained results demonstrate that in comparison with younger rats extremely old animals are capable of similar or relatively greater cardiovascular adaptations to endurance training in terms of aerobic power. It is pointed out that three animals (43 percent) in the 24-mo sedentary control group developed tumors, whereas none of the trained animals showed similar signs. G.R.

A85-14659

**A MORPHOMETRIC STUDY OF THE CAROTID BODY IN CHRONICALLY HYPOXIC RATS**

K. H. MCGREGOR, J. GIL, and S. LAHIRI (Pennsylvania, University, Philadelphia, PA) *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1430-1438. refs

(Contract NIH-HL-08899; NIH-HL-19737; NIH-HL-26676)

It is pointed out that chronic hypoxia may allow the oxygen-sensitive cells in the carotid body and elsewhere to develop and undergo time-dependent structural and functional changes. Laidler and Kay (1975, 1978) compared ultrastructure of carotid bodies from the chronically hypoxic and normoxic rats and noted an increase in the volume of type I cell cytoplasm. They did not find a similar volume change in the type II cells. The present investigation was conducted to clarify the nature and extent of changes in the size and number of type I and type II cells at the electron-microscopy level with the aid of advanced morphometric technology. The main finding of the study is related to the observation of hypertrophy of type I cells in carotid bodies from chronically hypoxic rats. The magnitude of the type I cell hypertrophy was equivalent to an almost fourfold increase in mean cellular volume. G.R.

A85-14660\* National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

**CAUSES OF THE TRIGLYCERIDE-LOWERING EFFECT OF EXERCISE TRAINING IN RATS**

C. E. MONDON, C. B. DOLKAS, T. TOBEY, and G. M. REAVEN (NASA, Ames Research Center, Moffett Field; Stanford University; U.S. Veterans Administration, Medical Center, Palo Alto, CA) *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1466-1471. Research supported by the U.S. Veterans Administration and NASA. refs

(Contract NIH-HL-08506)

Studies conducted with human subjects and laboratory animals have consistently shown a reduction in serum triglyceride (TG) in exercise-trained subjects. The obtained data have suggested that this decrease was due to a reduction in hepatic TG secretion. The present investigation, which was conducted with rats trained to attain a high level of spontaneous running activity, provides support for the earlier results. In addition, insights are obtained regarding the mechanism by which exercise lowers TG levels. Since the liver accounts for the vast majority of endogenous very

low density lipoprotein (VLDL)-TG secretion, the fall in TG secretion rate seen in exercise-trained (ET) rats must be due to a reduction in hepatic TG secretion. G.R.

A85-14661\* Arizona Univ., Tucson.

**ATROPHY AND GROWTH FAILURE OF RAT HINDLIMB MUSCLES IN TAIL-CAST SUSPENSION**

S. R. JASPERS and M. E. TISCHLER (Arizona, University, Tucson, AZ) *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1472-1479. refs

(Contract NAGW-227; NIH-AM-28647)

The primary objective of the present study is related to an evaluation of a modified tail-cast suspension model as a means of identifying metabolic factors which control or are associated with muscle atrophy and growth failure. Two different control conditions (normal and tail-casted weight bearing) were studied to determine the appropriate control for tail-cast suspension. A description is presented of a model which is most useful for studying atrophy of hindlimb muscles under certain conditions. Female Sprague-Dawley rats were employed in the experiments. Attention is given to growth rate and urinary excretion of urea and ammonia in different types of rats, the relationship between body weight and skeletal muscle weight, and the relationship between animal body weight and rates of protein synthesis and protein degradation. G.R.

A85-14662

**PULMONARY OXYGEN TOXICITY IN AWAKE DOGS - METABOLIC AND PHYSIOLOGICAL EFFECTS**

A. L. HARABIN, L. D. HOMER, and M. E. BRADLEY (U.S. Navy, Naval Medical Research Institute, Bethesda, MD) *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1480-1488. refs

(Contract NAVY TASK M0099, PN01C, 0010)

Selective endothelial cell damage is found in the lungs of animals exposed to normobaric hyperoxia. The present investigation is concerned with the effect of exposure to 100 percent O<sub>2</sub> at 1 atmosphere absolute (ATA) on several aspects of pulmonary physiology as well as angiotensin-converting enzyme (ACE) activity in unanesthetized dogs. The significance of the obtained results is evaluated. The evidence is found to be accumulating that the metabolic function of pulmonary endothelial cells is depressed by O<sub>2</sub> exposure before changes in hemodynamics, permeability, or gas exchange occur, and may provide a promising route of detecting lung damage. G.R.

A85-14663

**RELATED AND UNRELATED CHANGES IN RESPONSE TO EXERCISE AND COLD IN RATS - A REEVALUATION**

M. HARRI, T. DANNENBERG, R. OKSANEN-ROSSI, E. HOHTOLA, and U. SUNDIN (Kuopio, University, Kuopio; Oulu, University, Oulu, Finland; Stockholms Universitet, Stockholm, Sweden) *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1489-1497. Sponsorship: Ministry of Education of Finland. refs

(Contract MEF-9449/78/80; MEF-9040/78/81; MEF-10422/78/81)

The present investigation is concerned with questions regarding an improvement of a resistance to cold in rats as a result of physical training. Adult male Wistar rats were employed in the study. The rats were divided randomly into groups. One group was trained on a motor-driven treadmill, while other rats were acclimated to cold. Some rats were trained on a treadmill and acclimated to cold. After 10 wk of treatments, the rats were killed, and body and organ weights were determined. The ability of the rats to maintain their body temperature during cold stress was followed during a test swim in cold water and exposure to cold air. The adaptive changes produced by the treatments used can be grouped in three different categories, including cold specific, training specific, and nonspecific changes. The results are discussed and evaluated. G.R.



## 51 LIFE SCIENCES (GENERAL)

A85-14666

### SLEEP-WAKING PATTERN AND BODY TEMPERATURE IN HYPOXIA AT SELECTED AMBIENT TEMPERATURES

B. HALE, D. MEGIRIAN, and M. J. POLLARD (Tasmania, University, Hobart, Australia) *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1564-1568. Research supported by the SIDS Research Foundation, Tasmanian SID Society, and University of Tasmania; National Health and Medical Research Council of Australia. refs

(Contract NHMRC-83/03/0; NHMRC-83/0550)

The present investigation is concerned with the effect of hypoxic breathing and low ambient temperature (Ta) on the rat's sleep-waking pattern (SWP) and lower body temperature (Tb) when compared with control conditions of normoxia and neutral temperature (21 percent O<sub>2</sub>/29 C). Fifteen percent oxygen was chosen rather than severe hypoxia because at this level the SWP of the rat is disrupted but a measurable amount of paradoxical sleep (PS) is retained. It is found that both hypoxia and low Ta affect both states of consciousness and deep body temperature. If hypoxia and low Ta contribute to the risk for the sudden infant death syndrome, then their effects may be additive on sleep-waking mechanisms. G.R.

A85-14741

### PERIODICITY OF EXTINCTIONS IN THE GEOLOGIC PAST DETERMINISTIC VERSUS STOCHASTIC EXPLANATIONS

J. A. KITCHELL (Wisconsin, University, Madison, WI) and D. PENA (Wisconsin, University, Madison, WI; Escuela Tecnica Superior de Ingenieros Industriales, Madrid, Spain) *Science* (ISSN 0036-8075), vol. 226, Nov. 9, 1984, p. 689-692. Research supported by the U.S.-Spanish Committee for Educational and Cultural Affairs. refs

(Contract NSF BSR-83-07099; DAAG29-80-C-0041)

Three different causes for statistically determined biological species extinction peaks at 26 Myr intervals are examined in terms of a comparison between deterministic and stochastic techniques for interpreting the data. The hypotheses studied comprise a deterministic impulse which occurs with a fixed periodicity, species evolution affected by a deterministic cycle containing a variable which exhibits periodicity, and a stochastic dynamic system where the events were produced by an unknown number of causes. Attention is focused on extinction events in the past 250 and 570 Myr as defined by the geologic-fossil record. A stochastic autoregressive time series model is found to give a best fit to the data, suggesting a 31 Myr extinction cycle. When extended through the Phanerozoic period, no bipartite distribution is noted, contrary to calculations by Van Valen (1984). M.S.K.

A85-14746

### HEMOPOIESIS IN DOGS DURING EXPERIMENTS WITH ACUTE BLOOD LOSS REPLACED BY PFS EMULSION IN COMBINATION WITH POLYGLUCINE [KROVETVORENIE U SOBAK V OPYTAKH S OSTROI KROVOPOTEREI, VOZMESHCHENNOI EMUL'SIEI PFS V SOCHETANII S POLIGLIUKINOM]

F. M. GUSENOVA, N. I. AFONIN, U. U. AKHSIANOV, and N. N. KONTUGANOV (Tsentrul'nyi Institut Gematologii i Perelivaniia Krovi, Moscow, USSR) *Patologicheskaya Fiziologiya i Eksperimental'naya Terapiia* (ISSN 0031-2991), Sept.-Oct. 1984, p. 3-7. In Russian. refs

In experiments on eleven male and female dogs hemopoietic function was studied following the acute loss of blood replaced by polyglucine and an emulsion based on carbon tetrafluoride compounds. A group of control animals received albumin in replacement of the extracted blood. It is found that the emulsion displayed no negative effects on hemopoiesis and did not impair the natural process of hemopoiesis regulation following acute blood loss. I.H.

A85-14747

### THE EFFECT OF EXOGENOUS CHOLINESTERASE ON THE LUNG SURFACTANT SYSTEM FOLLOWING MASSIVE BLOOD LOSS [VLIANIE EKZOGENNOI KHOLINESTERAZY NA SURFANTNUIU SISTEMU LEGKIKH POSLE MASSIVNOI KROVOPOTERI]

V. I. ZELIAK, G. IA. BAZAREVICH, T. N. NORMAN (Minskii Meditsinskii Institut, Minsk, Belorussian SSR), and A. K. LEKSINA (Kazanskii Nauchno-Issledovatel'skii Institut Travmatologii i Ortopedii, Kazan, USSR) *Patologicheskaya Fiziologiya i Eksperimental'naya Terapiia* (ISSN 0031-2991), Sept.-Oct. 1984, p. 8-10. In Russian. refs

A85-14748

### THE POSSIBILITY OF USING BLOOD LOSS RESISTANT RATS IN THE STUDY OF THE MECHANISMS FOR THE MAINTENANCE OF ENERGY METABOLISM DURING PROLONGED SLEEP HYPOTENSION [VOZMOZHNOST' ISPOL'ZOVANIIA USTOICHIVYKH K KROVOPOTERE KRYIS DLIA IZUCHENIIA MEKHAIZMOV SOKHRANENIIA ENERGETICHESKOGO OBMENA PRI GLUBOKOI DLITEL'NOI GIPOTEZII]

T. V. KAZUEVA, M. V. ASSUR, and S. A. SELEZNEV (Leningradskii Nauchno-Issledovatel'skii Institut Skoroi Pomoshchi, Leningrad, USSR) *Patologicheskaya Fiziologiya i Eksperimental'naya Terapiia* (ISSN 0031-2991), Sept.-Oct. 1984, p. 11-13. In Russian. refs

A85-14749

### THE EFFECT OF ANTIOXIDANTS ON CHANGES IN LIPID CONTENT IN RAT LIVER FOLLOWING THERMAL BURN [VLIANIE ANTIKSIDANTOV NA IZMENENIE SOSTAVA LIPIDOV LISOZOM PECHENI KRYIS POSLE TERMICHESKOGO OZHOGA]

E. B. BURLAKOVA, T. L. ZAETS, N. I. DUBINSKAIIA, E. M. MOLOCHKINA, and G. V. ARKHIPOVA (Akademiia Nauk SSSR, Institut Khimicheskoi Fiziki; Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR) *Patologicheskaya Fiziologiya i Eksperimental'naya Terapiia* (ISSN 0031-2991), Sept.-Oct. 1984, p. 13-17. In Russian. refs

A85-14874

### MECHANISMS OF ORIENTATION SELECTIVITY OF 'SIMPLE' AND 'COMPLEX' NEURONS OF THE VISUAL CORTEX AND A MODEL OF THE ORIENTATION-SELECTIVE RECEPTIVE FIELD [MEKHAIZMY ORIENTATSIONNOI IZBIRATEL'NOSTI 'PROSTYKH' I 'SLOZHNYKH' NEIRONOV ZRITEL'NOI KORY I MODEL' ORIENTATSIONNO-IZBIRATEL'NOGO RETSEPTIVNOGO POLIA]

A. IA. SUPIN (Akademiia Nauk SSSR, Institut Evoliutsionnoi Morfologii i Ekologii Zhivotnykh, Moscow, USSR) *Uspekhi Fiziologicheskikh Nauk* (ISSN 0301-1798), vol. 15, Oct.-Dec. 1984, p. 23-45. In Russian. refs

The paper reviews the current understanding of mechanisms for the functioning of visual-cortex neurons that are selective with respect to the orientation of visual contours. Simple models explaining this selectivity by the character of the convergence of input connections on the neuron are not confirmed by experimental data. A model of an orientation-selective receptive field is proposed which is based on the properties of neuron dendrites. The model reproduces orientation selectivity that is invariant to the location of a stimulus in the receptive field, which is characteristic of 'complex' neurons. The operation of the model is described by simple formulas and can be represented by a simple equivalent electric circuit, which can serve as the basis of a device for identifying the orientation of lines and contours. L.M.

**A85-14875****EFFECT OF HYPOTHERMIA ON METABOLIC PROCESSES IN THE BRAIN [VLIANIE GIPOTERMII NA OBMENNYE PROTSESSY V MOZGU]**

E. Z. EMIRBEKOV, S. P. LVOVA, and R. A. ABDULLAEV (Dagestanskii Gosudarstvennyi Universitet, Makhachkala, USSR) *Uspekhi Fiziologicheskikh Nauk* (ISSN 0301-1798), vol. 15, Oct.-Dec. 1984, p. 85-99. In Russian. refs

The published literature concerning the effect of general hypothermia on the energy, nitrogen-protein, and lipid metabolism in the brains of warm-blooded animals is reviewed along with original experimental results. A theory is developed according to which the neurochemical mechanisms underlying the effect of hypothermia are expressed in the disturbance of microcirculation; a reduction in the utilization of macroergic substances; low-temperature blocking of polysynaptic neuronal pathways; the disturbance of membrane-synaptic transmission; the disturbance of membranes by the peroxidation of lipids; the discoordination of enzyme activity; and changes in the ratios of hydrocarbon-phosphor and nitrogen metabolites. L.M.

**A85-14910****MICROFOSSILS IN THE PETRIFIED COLUMNAR STROMATOLITHS OF THE UPPER RIPHEAN OF THE TURUKHANSK REGION [MIKROFOSSILII V OKREMNELYKH STOLBCHATYKH STROMATOLITAKH VERKHNOGO RIFEIA TURUKHANSKOGO RAIONA]**

V. N. SERGEEV (Akademiia Nauk SSSR, Geologicheskii Institut, Moscow, USSR) *Akademiia Nauk SSSR, Doklady* (ISSN 0002-3264), vol. 278, no. 2, 1984, p. 436-439. In Russian. refs

The remains of microorganisms found in large quantities in columnar stromatolites collected in the Turukhansk region are examined. These include filamentary and coccoidal microfossils that can be classified as *Eomycetopsis robusta*, *Eoentophysalis* spp., *Palaeopleurocapsa* aff. *wopfnerii*, and *Eosynechococcus grandis*. The photographs of the microfossils are presented, and their principal features are discussed. V.L.

**A85-14911****THE EFFECT OF ADRENALINE AND CAMP ON THE ACTIVITY OF A THERMOSTABLE CYTOPLASMIC INHIBITOR OF CA<sup>2+</sup>/ION TRANSPORT ACROSS THE MITOCHONDRIAL MEMBRANE OF THE RAT HEART [DEISTVIE ADRENALINA I SAMR NA AKTIVNOST' TERMOSTABIL'NOGO TSIOPLAZMATICHESKOGO INGIBITORA TRANSPORTA IONOVA CA<sup>2+</sup>/ CHEREZ MEMBRANU MITOKHONDRII SERD TSA KRYSY]**

M. KH. GAINUTDINOV, M. B. LUCHENKO, and I. A. KH. TURAKULOV (Nauchno-Issledovatel'skii Institut Kraevoi Meditsiny, Tashkent, Uzbek SSR) *Akademiia Nauk SSSR, Doklady* (ISSN 0002-3264), vol. 278, no. 2, 1984, p. 475-478. In Russian. refs

**A85-14912****THERMORESPONSES OF THE BRAIN TO SENSORY STIMULATION [TERMOOTVETY MOZGA NA SENSORNUII STIMULIATSIU]**

K. P. BUDKO, E. E. GODIK, A. M. GORBACH, I. V. GULIAEV, A. V. PETROV, A. M. TARATORIN, E. N. TSYKALOV, and I. A. SHEVELEV (Akademiia Nauk SSSR, Institut Radiotekhniki i Elektroniki and Institut Vysshei Nervnoi Deiatel'nosti i Neurofiziologii, Moscow, USSR) *Akademiia Nauk SSSR, Doklady* (ISSN 0002-3264), vol. 278, no. 2, 1984, p. 486-488. In Russian. refs

The thermoresponses of the white rat brain to audio-visual-tactile stimulation have been studied by thermal imaging. The resulting patterns of the responses vary in their temporal development, the extent of localization, and spacial features. The possible mechanisms of the thermoresponses of the cortex to adequate sensory stimulation are briefly discussed. V.L.

**A85-14913****PROTEIN AND RNA CONTENTS IN THE NEURONS AND GLYOCYTES OF THE NUCLEUS SUPRAOPTICUS HYPOTHALAMI OF THE SMALL CAUCASIAN GROUND SQUIRREL DURING HYBERNATION [SODERZHANIE BELKOV I RNK V NEIRONAKH I GLIOTSITAKH SUPRAOPTICHESKOGO IADRA GIPOTALAMUSA MALOGO KAVKAZSKOGO SUSLIKA PRI ZIMNEI SPIACHKE]**

I. G. KARMANOVA, D. I. POPOVA, N. L. RUBINSKAIA, O. E. KHOMUTETSKAIA, T. KH. SHORTANOVA, and T. N. GOLOVINA (Akademiia Nauk SSSR, Institut Evoliutsionnoi Fiziologii i Biokhimii and Institut Fiziologii, Leningrad; Kabardino-Balkarskii Gosudarstvennyi Universitet, Nalchik, USSR) *Akademiia Nauk SSSR, Doklady* (ISSN 0002-3264), vol. 278, no. 2, 1984, p. 495-497. In Russian. refs

**A85-14932****SEASONAL READJUSTMENTS OF LIPOLYTIC PROCESSES AND MIOCARDIAL FUNCTION IN RABBITS UNDER CONDITIONS OF HOMODYNAMIC HEART OVERSTRAIN [SEZONNYE PERESTROIKI LIPOLITICHESKIKH PROTSESSOV I FUNKTSII MIOKARDA U KROLIKOV PRI GEMODINAMICHESKOI PEREGRUZKE SERD TSA]**

V. A. FROLOV and L. V. EFIMOVA (Universitet Druzhby Narodov, Moscow, USSR) *Kardiologiya* (ISSN 0022-9040), vol. 24, Feb. 1984, p. 100-103. In Russian. refs

**A85-14940****THE DISTINCTIVE FEATURES OF THE BIOLOGICAL ACTION OF A LOW FREQUENCY ELECTRIC FIELD (50 HZ) ON ANIMALS IN VARIOUS STAGES OF ONTOGENESIS [OSOBENNSTI BIOLOGICHESKOGO DEISTVIA ELEKTRICHESKOGO POLIA NIZKOI /50 GTS/ CHASTOTY NA ZHIVOTNYKH V RAZNYE PERIODY ONTOGENEZA]**

I. P. KOZIARIN, I. I. SHVAIKO, and V. M. VOITSEKHOVSKII (Kievskii Meditsinskii Institut, Kiev, Ukrainian SSR) *Gigiena i Sanitariia* (ISSN 0016-9900), March 1984, p. 44-48. In Russian. refs

The biological effects of daily two-hour exposure to an electric field (EF) with a frequency of 50 Hz (10 and 20 kV/m) in rats from different ontogenetic stages are determined experimentally. The effects of the field were measured according to a number of integral biochemical indices including cholinesterase activity in the brain, glycogen content, and liver function. It is found that non-puberal animals were the most sensitive to the effects of the field. The results also demonstrated the need to take into account the age-sensitivity of organisms when establishing allowable maxima for EFs in populated areas. I.H.

**A85-14944****FEATURES OF MORPHOLOGICAL CHANGES IN THE ADRENAL GLANDS OF SEXUALLY IMMATURE WHITE MICE UNDER THE EFFECT OF AN INDUSTRIAL-FREQUENCY ELECTRIC FIELD [OSOBENNSTI MORFOLOGICHESKIKH IZMENENII V NADPOCHECHNYKH ZHELEZAKH NEPOLOVOZRELYKH BELYKH MYSHEI PRI DEISTVII ELEKTRICHESKOGO POLIA PROMYSHLENNOI CHASTOTY]**

L. A. IVANOVA and A. G. KARTASHEV (Tomskii Gosudarstvennyi Universitet, Tomsk, USSR) *Gigiena i Sanitariia* (ISSN 0016-9900), Feb. 1984, p. 76-78. In Russian. refs

**A85-14950****AGING OF SMOOTH-MUSCLE CELLS OF BLOOD VESSELS [STARENIE GLADKOMYSHECHNYKH KLETOK SOSUDOV]**

M. I. GUREVICH and I. V. FROLKIS (Akademiia Nauk Ukrainskoi SSR, Institut Fiziologii, Kiev, Ukrainian SSR) *Zhurnal Evoliutsionnoi Biokhimii i Fiziologii* (ISSN 0044-4529), vol. 20, no. 1, 1984, p. 91-97. In Russian. refs

The published literature on the morphofunctional features of the smooth-muscle cells of the blood vessels of old animals is surveyed. Particular emphasis is placed on age-related changes of the ultrastructure of smooth-muscle cells, their electrical and contractile properties, shifts in responses to biologically active

substances, and the close relationship between ultrastructural and functional changes. L.M.

**A85-15432**

## **NITROGEN FIXATION BY A METHANOGENIC ARCHAEABACTERIUM**

P. A. MURRAY and S. H. ZINDER (New York State College of Agriculture and Life Sciences, Ithaca, NY) *Nature* (ISSN 0028-0836), vol. 312, Nov. 15, 1984, p. 284-286. Research supported by the U.S. Department of Agriculture. refs

Diazotrophy (N<sub>2</sub> fixation) by an archaeobacterium, the methanogen *Methanosarcina barkeri* strain 227, is reported. The evolutionary implications of this finding for the proposal that the archaeobacteria, eubacteria, and eukaryotes diverged at an early stage in evolution are briefly discussed. C.D.

**A85-15433**

## **DINITROGEN FIXATION BY A THERMOPHILIC METHANOGENIC BACTERIUM**

N. BELAY, R. SPARLING, and L. DANIELS (Iowa, University, Iowa City, IA) *Nature* (ISSN 0028-0836), vol. 312, Nov. 15, 1984, p. 286-288. Research supported by the Petroleum Research Fund. refs

(Contract NIH-GM-30868; NSF PCM-82-07809)

The use of N<sub>2</sub> by the methanogen *Methanococcus thermolithotrophicus* has been studied and it is found that the organism can grow well, with multiple transfers, in medium having N<sub>2</sub> as the source of nitrogen. Growth yields with N<sub>2</sub> are on the average one-third those with NH<sub>4</sub>(+), suggesting that this bacterium requires a large amount of ATP for the reduction to occur. After growing in NH<sub>4</sub>(+)-containing medium, a long lag is observed before growth begins with N<sub>2</sub> as the nitrogen source; the NH<sub>4</sub>(+) levels must be very low for growth to begin. Cells grown in N<sub>2</sub>-fixing conditions reduce acetylene to ethylene. The discovery of a nitrogen-fixing archaeobacterium has important implications for studies on the evolution of nitrogenase, and the fact that *M. thermolithotrophicus* nitrogenase is active at 64 C suggests that a novel enzyme is involved. C.D.

**A85-15563**

## **STRUCTURAL AND FUNCTIONAL CHANGES IN BACTERIAL CELLS IN SPACE FLIGHT CONDITIONS (STUKTURNO-FUNKTSIONAL'NYE IZMENENIYA BAKTERIAL'NYKH KLETOK V USLOVIYAKH KOSMICHESKOGO POLETA)**

S. N. ZALOGUEV, S. V. PROZOROVSKII, L. N. KATS, F. M. KIRILLOVA, V. L. POPOV, A. F. MOROZ, N. G. ANTSEFEROVA, L. I. GLATMAN, M. P. BRAGINA, V. M. SHILOV (Institut Mediko-Biologicheskikh Problem; Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR; Toulouse III, Universite; Laboratoriia Bakteriologii; Centre National d'Etudes Spatiales, Toulouse, France) et al. *Akademiia Nauk SSSR, Doklady* (ISSN 0002-3264), vol. 278, no. 5, 1984, p. 1236, 1237. In Russian. refs

The results of the Cytos-2 experiment to observe structural and functional changes in *E. coli*, *Staphylococcus* (St.) aureus, and *Pseudomonas* (Ps.) aeruginosa cultivated in vitro during the joint French-Soviet scientific missions aboard the Soyuz-T5, Salyut-T5, and Soyuz-T6 orbiters are discussed. The cells were grown in a polyethylene growth chamber containing a viscous growth medium (1.2 ml) which accommodated 2.5 x 10 to the 5th cells per ml. The cultures were observed periodically during eleven hours of flight. In comparison with observations of a control group grown simultaneously on the ground, it is found that the St. aureus cells grown in space had significantly thicker cell walls (89 nm). In the small group of *E. coli* and Ps. aeruginosa cultures which survived the flight, substantial increases were found in cell wall and cytoplasmic membrane width in comparison with similar cultures grown on the ground. Some similarities in the formation of antitoxin ferruglobulin in both the space-grown and control cultures of Ps. aeruginosa are also discussed. I.H.

**A85-15564**

## **EFFECT OF STRUCTURAL HETEROGENEITY ON THE QUANTUM YIELD OF PHOTOSYNTHESIS (VLIANIE STRUKTURNOI GETEROGENNOSTI NA KVANTOVYI VYKHOD FOTOSINTEZA)**

L. I. VALKUNSA and V. I. LIUOLIA (Akademiia Nauk Litovskoi SSR, Institut Fiziki, Vilnius, Lithuanian SSR) *Akademiia Nauk SSSR, Doklady* (ISSN 0002-3264), vol. 278, no. 5, 1984, p. 1242-1246. In Russian. refs

The high quantum yield of photosynthesis cannot be explained by the conventional model of the photosynthesis system in which reaction centers (RCs) capture excitations from a homogeneous antenna matrix formed by chlorophyll molecules. The present paper analyzes the quantum yield due to charge separation in an RC with allowance for the heterogeneous globular (complex pigment-protein) structure of the photosynthesis system. It is shown that the high quantum yield of photosynthesis can be explained by the effect of the globular structure on the migration of excitation in the antenna without the imposition of additional requirements on the kinetic parameters of the system. B.J.

**A85-15597**

## **THE EOCENE/OLIGOCENE BOUNDARY EVENT IN THE DEEP SEA**

B. H. CORLISS (Duke University, Durham, NC; Woods Hole Oceanographic Institution, Woods Hole, MA), M.-P. AUBRY (Woods Hole Oceanographic Institution, Woods Hole, MA; Lyon I, Universite, Villeurbanne, Rhone, France), W. A. BERGGREN, L. D. KEIGWIN, JR. (Woods Hole Oceanographic Institution, Woods Hole, MA), J. M. FENNER (New Zealand Oceanographic Institute, Wellington North, New Zealand), and G. KELLER (Princeton University, Princeton, NJ; U.S. Geological Survey, Menlo Park; Stanford University, Stanford, CA) *Science* (ISSN 0036-8075), vol. 226, Nov. 16, 1984, p. 806-810. Research supported by the Atlantic-Richfield Co., British Petroleum Corp., Chevron U.S.A., Inc., Exxon Production Research Co., Gulf Oil Co. et al. refs

(Contract NSF OCE-80-008879)

Analysis of middle Eocene to early Oligocene calcareous and siliceous microfossils shows gradual biotic changes with no massive extinction event across the Eocene/Oligocene boundary. Biotic changes in the late Paleogene appear to reflect changing paleoclimatic and paleoceanographic conditions and do not support suggestions of a catastrophic biotic event caused by a bolide impact at the Eocene/Oligocene boundary. Author

**A85-15619**

## **REPEATS OF BASE OLIGOMERS AS THE PRIMORDIAL CODING SEQUENCES OF THE PRIMEVAL EARTH AND THEIR VESTIGES IN MODERN GENES**

S. OHNO (Beckman Research Institute of The City of Hope, Duarte, CA) *Journal of Molecular Evolution* (ISSN 0022-2844), vol. 20, no. 3-4, 1984, p. 313-321. Research supported by the Bixby Foundation and Wakunaga Pharmaceutical Company of America. refs

(Contract NIH-AL-15620)

**A85-15819**

## **THE CEREBELLUM AND THE CONTROL OF RHYTHMIC MOVEMENTS (MOZZHECHOK I UPRAVLENIE RITMICHESKIMI DVIZHENIAMI)**

IU. I. ARSHAVSKII, I. M. GELFAND, and G. N. ORLOVSKII (Moscow, Izdatel'stvo Nauka, 1984, 168 p. In Russian. refs

The neuronal mechanisms controlling the rhythmic movements of animals are discussed. Particular attention is given to a description of the structure and functions of two most important areas of movement control in the central nervous system: the cerebellum and the spinal cord. It is shown that the conversion of information into signals entering the cerebellum actually takes place in the spinal cord. Signals leaving the cerebellum change their transmission coefficients in the descending spinal pathways, permitting the transmission of information from various centers of motion in the spinal cord. It is suggested that the function of the cerebellum consists in coordinating movement in activities of the

body. The results of a number of experimental investigations are discussed in connection with the comparison of cerebellum and spinal cord functions. I.H.

**N85-12213#** Joint Publications Research Service, Arlington, Va.  
**ACHIEVEMENTS IN BIOLOGY OUTLINED**  
G. PETKOV *In its* East Europe Rept.: Sci. and Technol. (JPRS-ESA-84-038) p 14-15 25 Oct. 1984 Transl. into ENGLISH from Vecherni Novini (Sofia) 18 Aug. 1984 p 4  
Avail: NTIS HC A04/MF A01

Bulgarian advances in biological science are reviewed briefly. Developments in genetics, cryogenics, agrobiolgy, and scientific instrumentation are cited. R.S.F.

**N85-12545** Pennsylvania Univ., Philadelphia.  
**MAPPING OF MAMMALIAN ARRHYTHMIAS WITH THE CARDIAC LASER SCANNER** Ph.D. Thesis  
S. M. DILLON 1984 371 p  
Avail: Univ. Microfilms Order No. DA8417288

The first goal was to develop a high resolution cardiac impulse mapping system based on the optical signals produced by certain voltage sensitive dyes. The other aim, once such a device was realized, was to describe the initiation and maintenance of ventricular fibrillation. This latter problem was divided into examination of acute regional ischemia as an induction mechanism and the depiction of wavefront movement once fibrillation was initiated by timed extra stimuli. The optical mapping system, dubbed the cardiac laser scanner, uses a rapidly deflected laser spot to excite fluorescence from a large number of discrete sites on the heart. These sites are repeatedly probed by the laser spot and the fluorescence signals recorded to produce sampled records of fluorescent activity at each site on the heart. Since the dye transduced cardiac electrical activity into fluorescence these records are interpreted to yield the moments of electrical activation at each site. The activation moments are plotted to create isochronal maps of electrical wavefront movement.

Dissert. Abstr.

**N85-12546\*#** National Aeronautics and Space Administration, Washington, D. C.  
**ARCHITECTURE OF DERMATOPHYTE CELL WALLS: ELECTRON MICROSCOPIC AND BIOCHEMICAL ANALYSIS**  
Y. NOZAWA and Y. KITAJIMA Jul. 1984 29 p refs Transl. into ENGLISH from Japan. J. Med. Mycol. (Japan), v. 18, no. 1, 1977 p 3-15 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by Gifu Univ. School of Medicine, Japan  
(Contract NASW-3542)  
(NASA-TM-77441; NAS 1.15:77441) Avail: NTIS HC A03/MF A01 CSDL 06C

A review with 83 references on the cell wall structure of dermatophytes is presented. Topics discussed include separation and preparation of cell walls; microstructure of cell walls by electron microscopy; chemical composition of cell walls; structural model of cell walls; and morphological structure of cell walls. Author

**N85-12547#** Queen Elizabeth Coll., London (England). Dept. of Physics.  
**DETERMINATION OF BOUND WATER IN BIOLOGICAL TISSUE AND ENERGY DISSIPATED IN BOUND WATER BY LOW LEVEL MICROWAVES** Final Scientific Report, 1977 - 1983  
E. H. GRANT Feb. 1984 28 p  
(Contract N00014-77-G-0075)  
(AD-A143101; AD-E500670) Avail: NTIS HC A03/MF A01 CSDL 06R

The dielectric behavior of water and aqueous solutions of myoglobin, DNA and human serum low-density lipoprotein (LDL) has been investigated over a wide frequency range. By combining the measured complex permittivity of pure water at frequencies up to 70 GHz with literature values in the far infrared it is shown that the dielectric behavior of water may be characterized by a small subsidiary dispersion centered around 600 GHz, in addition to the well known microwave dispersion. The value of the infinite

frequency permittivity in respect of this principal dispersion region was found to be  $5.74 \pm 0.31$  at 20 C. Aqueous solutions of various forms of DNA were investigated between 2-18 GHz but no dielectric behavior was observed which could not be explained by classical dielectric theory. The interpretation of the dielectric measurements on aqueous solutions of myoglobin and LDL shows that both types of molecule, despite the large disparity in their size, attract a layer of irrotationally bound water of average width 1-2 molecules. GRA

**N85-12548#** National Bureau of Standards, Washington, D.C. Electrosystems Div.  
**ELECTRICAL PARAMETERS IN 60-HZ BIOLOGICAL EXPOSURE SYSTEMS AND THEIR MEASUREMENT: A PRIMER** Final Report  
M. MISAKIAN Apr. 1984 47 p refs Sponsored in part by DOE  
(Contract EA-77-A-01-6010)  
(PB84-217793; NBS/TN-1191) Avail: NTIS HC A03/MF A01; also available SOD as SN003-003-02581-0 CSDL 06F

Material is presented which is intended to provide assistance in the measurement of a number of electrical parameters that are of importance during bioeffects research involving 60 Hz electric and magnetic fields. The parameters that are considered are the electric field strength E, the magnetic induction or flux density B, field uniformity, harmonic content, phase relations between field components, and corona. Descriptions of the fields and methods for their laboratory generation are surveyed. It is shown that using relatively simple instrumentation, it is possible to characterize reasonably well the electric and magnetic fields used in animal exposure studies. R.S.F.

**N85-13453#** Joint Publications Research Service, Arlington, Va.  
**USSR REPORT: LIFE SCIENCES. BIOMEDICAL AND BEHAVIORAL SCIENCES**  
21 Nov. 1984 141 p Transl. into ENGLISH from various Russian articles  
(JPRS-UBB-84-025) Avail: NTIS HC A07

Research in biomedical and behavioral sciences is reported. Some general topics include aerospace medicine, agrotechnology, bionics, biophysics, epidemiology, genetics, human factors engineering, immunology, laser effects and nonionizing electromagnetic radiation effects. Much of the research deals with radiation biology with articles on radiation impairment of RNA metabolism in interphase death of lymphoid cells, improving effectiveness of irradiation for Lewis' carcinoma in mice with adeturon and parametric analysis of periods of death in irradiated animal.

**N85-13457#** Joint Publications Research Service, Arlington, Va.  
**USSR REPORT: LIFE SCIENCES: BIOMEDICAL AND BEHAVIORAL SCIENCES**  
5 Dec. 1984 168 p refs Transl. into ENGLISH from various Russian articles  
(JPRS-UBB-84-026) Avail: NTIS HC A08

Research and progress in life sciences, biomedicine, and behavioral sciences is reported. Topics discussed include: aerospace medicine, agrotechnology, epidemiology, genetics, and physiology.

**N85-13464#** Harbor Branch Foundation, Fort Pierce, Fla.  
**CULTIVATION AND CONVERSION OF MARINE MACROALGAE**  
J. H. RYTHIER, T. A. DEBUSK, and M. BLAKESLEE May 1984 88 p refs  
(Contract DE-AC02-83CH-10093)  
(DE84-004522; SERI/STR-231-2360) Avail: NTIS HC A03/MF A01

The development of an alternative ocean energy farm concept that would not be dependent upon deep ocean water or other extraneous sources for its nutrient supply and that could be located in shallow, near shore, and protected coastal ocean areas was studied. Five tasks are reported: determination of the annual yield of Ulva in non-intensive cultures; evaluation of the effect of carbon

## 51 LIFE SCIENCES (GENERAL)

concentration on Gracilaria and Ulva yields; evaluation of spray/mist culture of Ulva and Gracilaria; species screening for the production of petroleum replacement products; and synthesis analysis, and economic energy evaluation of culture data. For a land-based energy production system utilizing saline waters from underground aquifers or enclosed coastal areas, research was performed to evaluate growth and biomass production of all macroscopic algal species that could be obtained in adequate quantity in the central Florida area. DOE

**N85-13465#** Brookhaven National Lab., Upton, N. Y. Dept. of Applied Science.

### FIELD/CELL INTERACTION MODEL

E. FINDL 1984 6 p refs Presented at the IEEE/Engineering in Medicine and Biology Society Meeting, Los Angeles, 15-16 Sep. 1984

(Contract DE-AC02-76CH-00016)

(DE84-011914; BNL-34729; CONF-840966-1) Avail: NTIS HC A02/MF A01

Low energy level stimuli ranging from electric fields, radio frequency fields, magnetic fields to mechanical vibration, were used to elicit responses from living cells. Each of these stimuli may act on cells by different mechanisms. It is quite probable, however, that the mechanisms are similar since the effects are similar regardless of the type of stimuli. Three approaches to explaining the mechanism(s) of cell/stimuli interaction are presented that lead to a comprehensive model to tie together all of the approaches. DOE

**N85-13466#** European Space Agency, Paris (France).

### A SURVEY OF SPACE BIOLOGY AND SPACE MEDICINE

H. PLANEL (Universite Paul Sabatier, Toulouse) and H. OSER Feb. 1984 29 p refs

(ESA-BR-17; ISSN-0250-1589) Avail: NTIS HC A03/MF A01

The effects of weightlessness on the cardiovascular system, vestibular system, and locomotor apparatus are summarized. Morphological, theoretical, and experimental aspects of the influence of weightlessness at cellular level are discussed. Phylogenetic and ontogenic effects of weightlessness and the influence of gravity on plants are reviewed. The hazards and biological effects of cosmic radiation, and the synergism of space radiation and weightlessness are outlined. Exobiology is mentioned. Author (ESA)

## 52

### AEROSPACE MEDICINE

Includes physiological factors; biological effects of radiation; and weightlessness.

**A85-13106#**

### PLASMA VASOPRESSIN, RENIN ACTIVITY AND ALDOSTERONE DURING A 4-DAY HEAD-DOWN BED REST WITH AND WITHOUT EXERCISE

G. ANNAT, E. JARSAILLON, G. GAUQUELIN, M. VINCENT, C. GHARIB (Lyon I, Universite, Lyons, France), A. GUELL (Centre Hospitalier Regional Universitaire, Rangueil, Toulouse, France), A. SASSOLAS (Hopital Neurologique, Lyons, France), and J. M. POTTIER (Tours, Universite, Tours, France) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 6 p. Research supported by the Centre National d'Etudes Spatiales and Universite Lyon I. refs (IAF PAPER 84-174)

Hormonal responses to head-down (-6 deg) bed rest for up to 4 d without or with two 1-h supine-bicycle-exercise periods per day are investigated experimentally in eight male subjects, partially simulating the effects of zero gravity. The results are presented in tables and graphs and characterized. Neurohypophyseal secretory

activity is found to remain unchanged, but there is a progressive secondary hyperaldosteronism and a decrease in urinary Na(+)/K(+) ratio; no difference is observed when exercise is added to the protocol. T.K.

**A85-13107#**

### THE INFLUENCE OF LOWER BODY NEGATIVE PRESSURE (LBNP) UPON CIRCULATING HORMONES - THE EFFECT OF ANGIOTENSIN BLOCKADE

F. BONDE-PETERSEN, B. HESSE, S. RASMUSSEN, O. HENRIKSEN, N. J. CHRISTENSEN, WARBERG, C. STADEAGER, M. D. NIELSEN, P. MALSKAR, and B. ELMANN-LARSEN (Copenhagen University, Copenhagen, Denmark) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 6 p. Research supported by the Danish Space Board. refs (IAF PAPER 84-175)

The effect of systemic or local blockade of the renin-angiotensin system on the cardiovascular and hormonal response to LBNP at -20 or -40 mm Hg is investigated experimentally in healthy male subjects with and without previous Na depletion. Findings include enhanced sympatheticoadrenal activation and vasopressin release, decreased peripheral venous compliance, possibly increased hepatosplanchnic compliance, and decreased orthostatic tolerance. T.K.

**A85-13108#**

### INFLUENCE OF PHYSICAL TRAINING ON INSULIN RESPONSES TO GLUCOSE LOADS DURING BEDREST (HDT 6 DEG)

H. M. WEGMANN, F. BAISCH, and P. ESSER (Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Institut fuer Flugmedizin, Cologne, West Germany) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 5 p. refs (IAF PAPER 84-176)

Oral glucose tolerance tests were performed with human subjects in weightlessness simulation using 6 deg head down bedrest trials. The subjects included both untrained and trained athletes. Measurements were made of glucose, insulin, and C-peptide blood levels during 7 days in bed. Both glucose and insulin levels were found to rise with prolonged muscle inactivity, and were more pronounced in the nonathletes. The C-peptide tests identified higher insulin secretion from pancreatic B-cells. The results suggest that glucose homeostasis is upset in humans during long-duration spaceflight, which may have significant operational implications. M.S.K.

**A85-13112#**

### CARDIOVASCULAR SYSTEM AND MICROGRAVITY SIMULATION AND INFLIGHT RESULTS

J. M. POTTIER, F. PATAT, P. ARBEILLE, L. POURCELOT (Tours, Universite, Tours, France), P. MASSABUAU, A. GUELL (Hopital Rangueil, Toulouse, France), and C. GHARIB (Lyon I, Universite, Lyons, France) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 6 p. refs (IAF PAPER 84-186)

Results of ultrasonic cardiovascular investigations performed during the Franco-Soviet flight aboard Salyut-7 in June 1982 are compared with variations of the same parameters studied during ground-based simulations. It is shown that the antiorthostatic bed-rest simulation partially reproduces the microgravity conditions and appears to be better adapted to cardiac hemodynamics (despite some differences) and cerebral circulation than to the inferior-limb circulation. L.M.



**A85-13113#****CARDIOCIRCULATORY ADJUSTMENT DURING A 7 DAY MICROGRAVITY SIMULATION (6 DEG HEAD DOWN TILT, HDT)**

F. BAISCH, L. BECK, E. W. MUELLER, and A. SAMEL (Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Institut fuer Flugmedizin, Cologne, West Germany) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 6 p. refs (IAF PAPER 84-187)

The microgravity simulation experiments reported here were conducted with the objective of defining, under controlled conditions, the early adaptive response to microgravity. In all subjects, blood volume decreased by 14 percent during the HDT period; the orthostatic tolerance time decreased from 19 to 10 min. At the same time, the red cell volume decreased by 10 percent. During the first 24 hrs of the HDT period, the average heart rate decreased by 14 percent; it increased again later and approached control values toward the end of the simulation period. There was an increase in the leg tissue stiffness which correlated with the plasma volume loss. Skin and subdermal tissues also showed a tendency to higher stiffness during the first days of HDT, the increasing rigidity being attributed to a loss of water content of the tissue. In the post-simulation period, when plasma volume reached control values, the left ventricular diastolic volume was always higher than the control value. V.L.

**A85-13115#****INTEREST OF HEAD DOWN TILT TO SIMULATE THE NEUROCIRCULATORY MODIFICATIONS OBSERVED DURING SPACE FLIGHT**

A. GUELL, L. POURCELOT, J. L. MAUROUX, PH. DUPUI, and A. BES (Centre Hospitalier Regional Universitaire, Rangueil, Toulouse, France) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 5 p. refs (IAF PAPER 84-190)

Eventual circulatory modifications in the cephalic region caused by prolonged antiorthostatism (7 days) at -6 deg head down are investigated. Elements favoring increased intracranial pressure and, hence, cerebral oedema were noted: dilatation and oedema of eye fundus, microvoltage and tendency to sleepiness during EEG readings, and modification of brain tissue density. It is presumed that, related to this extracranial venous stasis, stasis also exists in the intercerebral region, and is responsible for increased intracranial pressure. B.J.

**A85-13116#****EFFECTS OF HEAD DOWN TILT (HDT) FLUID VOLUME SHIFT ON CEREBRAL SENSORY RESPONSES**

G. AUST, A. PUTZKA, and F. BAISCH (Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Institut fuer Flugmedizin, Cologne, West Germany) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 6 p. refs (IAF PAPER 84-191)

Responses of the vestibular and cochlear functions and a possible relationship to the space adaptation syndrome (SAS) were studied in subjects before, during, and after 6 deg HDT bedrest for 7 days. Monitoring was carried out on the spontaneous nystagmus, monaural bithermal caloric vestibular results, ECG, and head and body movements. All subjects reported classic SAS symptoms. The fluid volume shift from the caudal to cranial areas in the low pressure system was noted. Ataxia appeared in head and body movements while greater sways than normal were present in lateral motion, particularly to the left side. Three possible mechanisms for the changes are discussed. M.S.K.

**A85-13117#****EYE MOVEMENTS DURING SLEEP AND EEG IN ZERO-GRAVITY**

O. QUADENS, P. A. DEQUAE (Antwerpen, Universitaire Instelling, Antwerp, Belgium), H. L. GREEN, and S. F. D. STOTT (Clinical Research Centre, Harrow, Middx., England) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 6 p. Research supported by the Science Research Council of England and Fonds National de la Recherche Scientifique. refs (IAF PAPER 84-192)

Oxford Medilog recorders were used to record the muscle activity (EMG) and the eye-movements (EOG) during the first two sleep periods of the Spacelab 1 mission. The EOG evidenced an important increase in the number of eye-movements during night zero as compared to the pre- and postflight baseline data. The electroencephalogram (EEG) was recorded during parabolic flights and showed a significant increase in the theta frequency band during the acrophase of the parabolas. Author

**A85-13592****OCCUPATIONAL ASPECTS OF HYPERTENSIVE DISEASE [PROFESSIONAL'NYE ASPEKTY GIPERTONICHESKOI BOLEZNI]**

A. Z. TSFASMAN, I. F. STARYKH, G. N. ZHURAVLEVA, and T. V. ILINA (Moscow, Vsesoiuznyi Zaochnyi Institut Inzhenerov Zheleznodorozhnogo Transporta and Vsesoiuznyi Nauchno-Issledovatel'skii Institut Zheleznodorozhnoi Gigieny, 1983, 96 p. In Russian. refs

The influence of various occupations on the development of hypertensive disease is examined. Attention is given to the pathogenic aspects of hypertension, methods of diagnosis, and different ways of treating the disease. The distribution of hypertension is analyzed in a broad range of professions, including locomotive engineers, truck drivers, doctors, journalists, and lawyers. Reference is made to a number of recent clinical studies of hypertension found in the literature. I.H.

**A85-13593****ARRHYTHMIAS AND CONDUCTION DISTURBANCES OF THE HEART [NARUSHENIYA RITMA I PROVODIMOSTI SERDTSIA]**

Z. I. IANUSHKEVICHUS, IU. IU. BREDIKIS, A. I. LUKOSHIAVICHUTE, and P. V. ZABELA (Moscow, Izdatel'stvo Meditsina, 1984, 288 p. In Russian. refs

The current state of medical knowledge concerning disruptions in the conduction system of the heart is reviewed. Attention is given to an explanation of the physical mechanisms of heart arrhythmia, premature parasystole, atrial flutter, and ventricular preexcitation. The methods for diagnosis and treatment of these disturbances are also discussed, including antiarrhythmic drugs, electrical defibrillation, electric stimulation, and a variety of surgical techniques. I.H.

**A85-13594****SPORTS MEDICINE [SPORTIVNAIA MEDITSINA]**

A. V. CHOGOVDZE, ED. and L. A. BUTCHENKO, ED. (Moscow, Izdatel'stvo Meditsina, 1984, 384 p. In Russian. No individual items are abstracted in this volume.

The principal physical adaptations of the human organism to exercise and consistent participation in sports activities are discussed. The states of health, physical development, and the work capacity of athletes are evaluated using current investigative methods. Particular attention is given to the importance of medical consultations and education programs in the maintenance of the general health of sports participants. Some of the medical aspects of compulsive behavior associated with weight reduction through exercise, and nutrition among athletes are also examined. I.H.

A85-13597

**PHYSIOLOGICAL INVESTIGATIONS IN WEIGHTLESSNESS  
[FIZIOLOGICHESKIE ISSLEDOVANIYA V NEVESOMOSTI]**

P. V. SIMONOV, ED. and I. I. KASIAN, ED. Moscow, Izdatel'stvo Meditsina, 1983, 304 p. In Russian. No individual items are abstracted in this volume.

A series of papers describing experimental data collected during studies of human physiology in outer space are presented. The areas of study include: the general biomedical problems of weightlessness; the effects of weightlessness on the functioning of cardiovascular, respiratory, and other systems in humans; work capacity and the prognosis of states of health in a weightless environment; and the pathogenesis and prophylaxis of the adverse effects of weightlessness. Some specific topics include: the adaptation of the human organism to the weightless environment; the distinctive features of cerebral blood circulation during sleep and wakefulness is cosmonauts aboard the Salyut-4 orbital space station; and the work regime of cosmonauts during space flights. Some additional topics include: water-salt homeostasis in a weightless environment; the principles of predicting the states of health of cosmonauts during long space flights; and the role of physical training in maintaining good health during long flights.

I.H.

A85-13611

**PHYSICAL TRAINING AND +GZ TOLERANCE**

U. I. BALLDIN (Karolinska Institutet; Forsvarets Forskningsanstalt, Stockholm, Sweden) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 991, 992.

A crucial factor in pilots flying modern high-performance aircraft is +Gz tolerance. There are reports concerning plausible G-induced losses of consciousness in high-performance aircraft. It is pointed out that a G-induced loss of consciousness lasting about 15-20 s followed by retrograde amnesia and mental confusion may be disastrous. It appears desirable that all negative factors influencing G tolerance should be reduced as much as possible before discussing methods of improving G tolerance. Such negative factors include heat stress, dehydration, hypoglycemia, hypocapnia through hyperventilation, hypoxia, fatigue, sleep deprivation, and alcohol. Several physiological-technological methods are already available to increase the G tolerance of pilots. Attention is given to centrifuge training, resistance training and isometric muscle training, abdominal muscle training, and a neck muscle training program.

G.R.

A85-13612

**MUSCLE FIBER TYPE COMPOSITION AND G-TOLERANCE**

P. A. TESCH (Karolinska Institutet, Stockholm, Sweden) and U. I. BALLDIN (Karolinska Institutet; Forsvarets Forskningsanstalt, Stockholm, Sweden) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1000-1003. Research supported by the Swedish Air Force. refs

The relationship between sustained G-tolerance and muscle fiber type composition was studied in 28 fighter pilots and 10 nonpilots. The G-tolerance, as assessed by the aerial combat maneuver (ACM) acceleration profile and modifications of it, was measured in a human centrifuge. Percutaneous muscle biopsies were obtained from m. vastus lateralis at rest. Histochemical analyses were carried out to identify and calculate the percentage of fast twitch (FT) and slow twitch (ST) fiber types. Additional analyses were performed for determination of muscle fiber size and capillary density. Mean (+ or - S.D.) muscle fiber type composition in pilots and nonpilots, respectively, were 60 + or - 5 and 52 + or - 10 percent FT. There was no correlation of fiber type composition, fiber size, or capillary supply with G-tolerance. It is concluded that muscle fiber type composition and associated metabolic characteristics do not modify sustained G-tolerance to any significant extent.

Author

A85-13614

**THE EFFECT OF ALTITUDE ON NORMAL PULMONARY  
FUNCTION TESTS - A COMPARISON BETWEEN THE DEAD  
SEA AREA AND AMMAN**

N. A. SLIMAN (Jordan University Hospital, Amman, Jordan) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1010-1014. refs

A85-13617

**SLEEP OF SHIFTWORKERS WITHIN THE ARCTIC CIRCLE**

H. ANDERSON, G. MYHRE (Royal Norwegian Air Force, Institute of Aviation Medicine, Oslo, Norway), M. M. C. CHAMBERS, A. N. NICHOLSON, and B. M. STONE (RAF, Institute of Aviation Medicine, Farnborough, Hants., England) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1026-1030. refs

The sleep of shiftworkers in the Arctic has been investigated using electroencephalography. The subjects were studied four times a year over a 2-year period. There was a trend toward less restful sleep during the autumn and winter months, but otherwise sleep at various times of the day was similar to that of individuals elsewhere. This would suggest that sleep disturbance in polar shiftworkers can be managed in a similar way to that of shiftworkers in temperate regions.

Author

A85-13618

**THE EFFECT OF SLEEP LOSS ON HIGH INTENSITY EXERCISE  
AND RECOVERY**

R. G. MCMURRAY and C. F. BROWN (North Carolina, University, Chapel Hill, NC) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1031-1035. refs

The cardiovascular and metabolic responses of five male subjects during submaximal exercise (80 percent V $\dot{V}$ /O $_2$  max) were examined after 24 h of wakefulness. The protocol consisted of two sets of two trials separated by 7-10 days: first, a 20 min exercise bout, then a normal night's sleep, followed by another 20 minutes of exercise; second, a 20-min exercise bout, 24 h of wakefulness, then another 20 min exercise trial. Exercise ventilation, heart rate, and oxygen uptake were not affected by sleep loss. However, sleep loss caused the recovery ventilation and oxygen uptake to remain higher than normal during the slow phase of recovery. Blood glucose levels were found to be greater during the sleep deprived trials compared to controls, but were similar to controls 15 min after exercise. Blood lactates were lower at the end of exercise after sleep deprivation and remained lower during the recovery period. Changes in plasma volume were not affected by sleep loss. These results suggest that although sleep loss may not overtly affect acute submaximal exercise performance, it attenuates the recovery process.

Author

A85-13622

**TRANSDERMAL THERAPEUTIC SYSTEM SCOPOLAMINE  
(TTSS), DIMENHYDRINATE, AND PLACEBO - A COMPARATIVE  
STUDY AT SEA**

S. NOY, S. SHAPIRA, A. ZILBINGER (Israeli Naval Hyperbaric Institute, Tel Aviv, Israel), and J. RIBAK (Israeli Naval Hyperbaric Institute; Tel Aviv University, Tel Aviv, Israel) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1051-1054. refs

The efficacy of transdermally administered scopolamine was compared with the efficacy of oral dimenhydrinate and placebo therapy in the prevention of motion sickness at sea. Medication was administered on a controlled double blind basis to 140 subjects. A placebo effect reduced the motion sickness incidence (MSI) from 57.69 percent in the control group to 43.47 percent. Administration of dimenhydrinate reduced the MSI to 22.22 percent and the use of Transdermal Therapeutic System Scopolamine (TTSS) further reduced the MSI to 16.66 percent. TTSS afforded 61.67 percent protection against motion sickness at sea, compared to 48.88 percent protection with dimenhydrinate.

Author

**A85-13623****HYPOXIC MAN - LESSONS FROM EXTREME ALTITUDE (1984 ARMSTRONG LECTURE)**

J. B. WEST (California, University, La Jolla, CA) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1058-1062. refs

The present investigation is concerned with the physiological responses to extreme prolonged hypoxia, taking into account studies conducted during the American Medical Research Expedition to Mount Everest in the fall of 1981. The measurements conducted at four sites on the mountain show that man can tolerate the extreme hypoxia of these great altitudes only in connection with an enormous increase in ventilation. The studies included the measurement of barometric pressure on the summit. It is noted that all obtained pressures are substantially higher than those predicted from the U.S. Standard Atmosphere for these altitudes.

G.R.

**A85-14596****PROBLEM OF CONTROLLING THE FUNCTIONAL CONDITION IN HUMANS [PROBLEMA UPRAVLENIIA FUNKSIONAL'NYM SOSTOIANIEM CHELOVEKA]**

V. I. MEDVEDEV and A. V. MIROLIUBO (Voennno-Meditsinskaiia Akademiia, Leningrad, USSR) Fiziologiiia Cheloveka (ISSN 0131-1646), vol. 10, Sept.-Oct. 1984, p. 761-770. In Russian. refs

The paper outlines some general approaches to controlling the human functional condition by the activation of already existing response programs and the formation of new programs. Experimental data are presented which demonstrate the possibility of implementing type-2 artificial stable functional links in healthy individuals. It is shown that the formation of new links with prescribed properties is a promising approach to the control of the human functional condition.

B.J.

**A85-14597****A NEW FORM OF ARTIFICIAL STABLE FUNCTIONAL LINK OF THE HUMAN BRAIN [NOVAIA FORMA ARTIFITSIAL'NOI STABIL'NOI FUNKSIONAL'NOI SVIAZI V MOZGE CHELOVEKA]**

V. M. SMIRNOV, S. V. MEDVEDEV, and B. B. MAKHOTINA (Akademiia Meditsinskikh Nauk SSSR, Leningrad, USSR) Fiziologiiia Cheloveka (ISSN 0131-1646), vol. 10, Sept.-Oct. 1984, p. 771-777. In Russian. refs

A new form of the artificial stable functional link in the human brain (ASFL-IB) was obtained using implanted electrodes in patients with Parkinson's disease. Two types of ASFL-IB were obtained with a therapeutic aim: with selective frequency input and with expanded frequency input. The activation of ASFL-IB matrices induces a complex effect, manifested in a reduction of the main symptoms of the disease with an improvement in psychic activity. The activation of matrices with expanded frequency input makes it possible to achieve more pronounced and lengthy optimization effects than activation of matrices with selective frequency input.

B.J.

**A85-14600****VARIABILITY OF HEART RHYTHM UNDER INFORMATION-PROCESSING LOADS [VARIABEL'NOST' SERDECHNOGO RITMA PRI INFORMATSIONNYKH NAGRUZKAKH]**

A. I. STANKUS and E. N. SOKOLOV (Kaunasskii Meditsinskii Institut, Palanga, Lithuanian SSR) Fiziologiiia Cheloveka (ISSN 0131-1646), vol. 10, Sept.-Oct. 1984, p. 852-858. In Russian. refs

An analysis was made of the changes in the structure of the heart rhythm under the effect of graded information-processing load (IPL), achieved by a gradual complication of the discrimination between acoustic auditory signals. Tests were performed on healthy adult males, and IPL was found to induce a tonic increase in the heart rate and a decrease of the energy of the heart-rhythm spectrum in the frequency band of slow irregular oscillations and respiratory arrhythmia. The individual reactivity to the IPL is

determined by the initial level of the parasympathetic-system effect.

B.J.

**A85-14653****DECREASE IN FUNCTIONAL RESIDUAL CAPACITY DURING SLEEP IN NORMAL HUMANS**

D. W. HUDGEL and P. DEVADATTA (National Jewish Hospital; Colorado, University, Denver, CO) Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1319-1322. refs

A decrease in functional residual capacity (FRC) during sleep could result in maldistribution of ventilation, microatelectasis, or airway closure. The present study has the objective to determine whether, and to what extent, FRC decreases during sleep in healthy subjects, taking into account direct measurement of lung volume with helium (He) dilution. Knowledge of the extent of this decrease will allow estimation of the physiological impact of such a decrease in different clinical situations. Thirteen healthy males were employed in the experiments. It was found that a rather modest, but statistically significant, decrease in FRC occurred during sleep in the subjects. The decrease was maximal during stages 3-4 and REM sleep. It is speculated that the decrease in FRC contributes to, but is not likely the sole cause of, the hypoxemia observed in the patients during sleep.

G.R.

**A85-14655****LACK OF EFFECT OF EXERCISE OF PLATELET ACTIVATION AND PLATELET REACTIVITY**

M. J. MANT, C. T. KAPPAGODA, and J. QUINLAN (Alberta, University, Edmonton, Canada) Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1333-1337. Research supported by the Alberta Heart Foundation. refs

The response of platelets to exercise is of fundamental physiological interest. It is also of pathophysiological interest because platelet activation may be one factor responsible for ischemic cardiac events occurring during vigorous exertion. The present investigation is concerned with the effects of brief maximal exertion in platelets in normal subjects. The conducted study differs from most others in two respects. Objective evidence of maximal exertion in the employed subjects is provided, and several indices of platelet activation and hyperreactivity are examined. Attention is given to the effect of brief maximal exertion on the platelet count and on tests which reflect changes in in vivo platelet aggregability, platelet-dense granule number, and platelet alpha-granule release.

G.R.

**A85-14658****EFFECT OF TEMPERATURE AND BARORECEPTOR STIMULATION ON REFLEX VENOMOTOR RESPONSES**

A. TRIPATHI, X. SHI, B. WENGER, and E. R. NADEL (John B. Pierce Foundation; Yale University, New Haven, CT) Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1384-1392. refs

(Contract NIH-HL-17732; NIH-HL-20634)

Lower body negative pressure (LBNP) is a technique often used to mimic the effect of gravity because it promotes pooling of a portion of the circulating blood volume in the lower extremities and decreases right atrial pressure. LBNP and NS (neck suction) have been employed in an attempt to selectively stimulate low- and high-pressure baroreceptors to study the reflex effects on venous compliance over a range of ambient temperatures. On the basis of the obtained results, it is concluded that reduced cardiac filling during LBNP appears to act via low-pressure baroreceptors and initiate compensatory cardiovascular reflexes to increase venous tone. A similar gradation of venoconstriction occurs in cool, neutral, and hot ambient temperatures. Carotid baroreceptors probably play little role in reflex compensatory adjustments in human forearm veins.

G.R.

**A85-14664****HYPOXEMIA INCREASES PLASMA CATECHOLAMINE CONCENTRATIONS IN EXERCISING HUMANS**

P. ESCOURROU, D. G. JOHNSON, and L. B. ROWELL (Washington, University, Seattle, WA; Arizona, University, Tucson, AZ) *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1507-1511. Research supported the by Ministere des Affaires Etrangeres of France. refs

(Contract NIH-HL-16910; NIH-AM-25318)

The present study was designed to test the hypothesis that hypoxemia, when combined with exercise, will raise plasma norepinephrine (NE) concentration in direct proportion to the increases in heart rate (HR) and the percent of maximal O<sub>2</sub> uptake required. It was found that hypoxemia caused large increments in plasma NE and epinephrine (E) concentration when the work load exceeded 40 percent of maximal O<sub>2</sub> uptake. The close correlation among percent maximal O<sub>2</sub> uptake, HR, NE, and E concentrations observed in normoxia was unaffected by hypoxemia. The subjects included seven normal men, aged 22-32 yr and weighing 65-82 kg. All men were physically active. G.R.

**A85-14665\*** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

**VO<sub>2</sub> KINETICS OF CONSTANT-LOAD EXERCISE FOLLOWING BED-REST-INDUCED DECONDITIONING**

V. A. CONVERTINO, D. J. GOLDWATER, and H. SANDLER (NASA, Ames Research Center, Biomedical Research Div., Moffett Field, CA; Arizona, University, Tucson, AZ) *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1545-1550. refs

Previous studies have shown that the oxygen uptake kinetics during exercise and recovery may be changed by alterations in work intensity, prior exercise, muscle group involvement, ambient conditions, posture, disease state, and level of physical conditioning. However, the effects of detraining on oxygen uptake kinetics have not been determined. The present investigation has the objective to determine the effects of deconditioning following seven days of continuous head-down bed rest on changes in steady-state oxygen uptake, O<sub>2</sub> deficit, and recovery oxygen uptake during the performance of constant-load exercise. The obtained results may provide support for previous proposals that submaximal oxygen uptake was significantly reduced following bed rest. The major finding was that bed-rest deconditioning resulted in a reduction of total O<sub>2</sub> transport/utilization capacity during the transient phase of upright but not supine exercise. G.R.

**A85-14667****WEIGHT LOSS AND CHANGES IN BODY COMPOSITION AT HIGH ALTITUDE**

S. J. BOYER and F. D. BLUME (Oregon Health Sciences University, Portland, OR; California State College, Bakersfield, CA) *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* (ISSN 0161-7567), vol. 57, Nov. 1984, p. 1580-1585. refs

**A85-14822****SHORT-TERM ACTIVE ORTHOSTATIC TEST IN COMBINATION WITH BLOOD DEPOSITION IN THE LOWER EXTREMITIES [KRATKOVREMENNAYA AKTIVNAYA ORTOSTATICHESKAYA PROBA V SOCHETANII S DEPONIROVANIEM KROVI V NIZHNIKH KONECHNOSTIAXH]**

V. D. VLASOV, A. S. NEKHAIEV, and S. K. CHUDILOVSKI (Voenno-Meditsinskii Zhurnal (ISSN 0026-9050), Aug. 1984, p. 47, 48. In Russian. refs

**A85-14823****CHANGES OF THE VISCOELASTIC PROPERTIES OF MUSCLES IN SEAMEN DURING VOYAGES [IZMENENIYA UPUGOVIAZKIKH SVOISTV MYSHTS U MORIAKOV V USLOVIAKH PLAVANIYA]**

E. A. KUSHNIRENKO and A. A. NEMCHENKO (Voenno-Meditsinskii Zhurnal (ISSN 0026-9050), Aug. 1984, p. 49, 50. In Russian.

**A85-14824****EFFECT OF SEVERAL FACTORS ON THE COURSE AND EXACERBATION OF ISCHEMIC HEART DISEASE [VLIANIE NEKOTORYKH FAKTOROV NA TECHENIE I OBOSTRENIE ISHEMICHESKOI BOLEZNI SERDTSA]**

A. M. KAPITANENKO and M. M. SHITIKOV (Voenno-Meditsinskii Zhurnal (ISSN 0026-9050), Aug. 1984, p. 51-53. In Russian.

**A85-14926****COMPUTER-AIDED TOMOGRAPHY IN CARDIOLOGY. COMMUNICATION I METHODOLOGY [KOMP'UTERNAIA TOMOGRAFIYA V KARDIOLOGII. I - METODIKA]**

I. KH. RABKIN, V. I. OVCHINNIKOV, and A. L. IUDIN (I Moskovskii Meditsinskii Institut, Moscow, USSR) *Kardiologiya* (ISSN 0022-9040), vol. 24, March 1984, p. 14-17. In Russian. refs

The methodology for computer-aided cardiac tomography is described. It is shown that computer tomography combined with synchronous ECG and intravenous bolus administration makes it possible to obtain a tomographic image of the heart at any phase of the cardiac cycle. In a series of tests of the system, computer aided tomography was performed in 306 patients with various forms of heart disease. A total of five levels of scanning were identified under normal conditions which present all structural elements of the heart. I.H.

**A85-14927****A COMPUTER ANALYSIS OF ECGs UNDER PHYSICAL LOAD [KOMP'UTERNYI ANALIZ EKG PRI FIZICHESKOI NAGRUIZKE]**

V. G. KAVTARADZE, T. KH. ARESHIDZE, K. V. IOSAVA, R. B. KURASHVILI, M. G. LEZHAVA, and T. G. GAPRINDASHVILI (Ministerstvo Zdravookhraneniia Gruzinskoi SSR, Institut Klinicheskoi i Eksperimental'noi Kardiologii, Tbilisi, Georgian SSR) *Kardiologiya* (ISSN 0022-9040), vol. 24, March 1984, p. 70-75. In Russian. refs

The results of a computer analysis of ECG data for one hundred men (aged 60 years or less) following treadmill exercise are reported. It is shown that reduced R-wave amplitude from ECG lead V(5) at maximum exercise occurred in subjects showing no evidence of ischemic heart disease. Increased R-wave amplitude from lead V5 was regarded as cardiac disfunction in response to exercise, preceeding the development of pathologic ST depression in the presence of ischemic ECG changes. A negative T-wave from leads III and aVF in the ECGs of subjects at rest did not correlate with abnormal test results. Ventricular arrhythmias were more common in subjects with nonischemic ECG changes during exercise. I.H.

**A85-14928****ECHOCARDIOGRAMS OF ADOLESCENT ATHLETES [EKHKOKARDIOGRAMMA IUNYKH SPORTSMENOV]**

V. I. ILNITSKII (Ternopol'skii Meditsinskii Institut, Ternopol, Ukrainian SSR) *Kardiologiya* (ISSN 0022-9040), vol. 24, March 1984, p. 116, 117. In Russian. refs

**A85-14929****AN EVALUATION OF CENTRAL HEMODYNAMICS BY COMPUTERIZED TETRAPOLAR THORACIC RHEOGRAPHY [OTSENKA TSENTRAL'NOI GEMODINAMIKI METODOM KOMP'UTERNOI TETRAPOLIARNOI GRUDNOI REOGRAFI]**

V. A. LIUSOV, L. V. ROMANOVA, A. S. PARFENOV, and S. N. ARKHIPOV (I Moskovskii Gosudarstvennyi Meditsinskii Institut; Gorodskaya Klinicheskaya Bol'nitsa No. 15, Moscow, USSR) *Kardiologiya* (ISSN 0022-9040), vol. 24, March 1984, p. 118. In Russian. refs

**A85-14930**

**TOLERANCE TO DYNAMIC AND STATIC PHYSICAL STRESS IN HYPERTENSIVE PATIENTS [TOLERANTNOST' K DINAMICHESKOI I STATICHESKOI FIZICHESKOI NAGRUZKE U BOL'NYKH GIPERTONICHESKOI BOLEZN'IU]**

A. E. TSIKULIN and D. V. VOLKOV (Kalininskii Meditsinskii Institut, Kalinin, USSR) Kardiologiya (ISSN 0022-9040), vol. 24, Feb. 1984, p. 113, 114. In Russian. refs

**A85-14931**

**THE YEARLY RHYTHM OF SEVERAL INDICES OF THE BLOOD COAGULATION SYSTEM AND LIPID VOLUME IN HEALTHY SUBJECTS AND IN PATIENTS WITH ISCHEMIC HEART DISEASE [GODICHNYE RITMY NEKOTORYKH POKAZATELEI SISTEMY SVERTYVANIYA KROVI I LIPIDNOGO OBMENA U ZDOROVYKH LITS U BOL'NYKH ISHEMICHESKOI BOLEZN'IU SERDTSIA]**

G. P. DERIAGINA, I. E. GANELINA, and N. L. ASLANIAN (Akademiia Meditsinskikh Nauk SSSR Leningrad, USSR; Institut kardiologii, Yerevan, Armenian SSR) Kardiologiya (ISSN 0022-9040), vol. 24, Feb. 1984, p. 107-109. In Russian.

**A85-14933**

**CIRCULATION AMONG HEALTHY RESIDENTS OF THE ARID ZONE OF TURKMENIA. II - RATIONED EXERCISE IN SUBJECTS WITH GOOD AND INADEQUATE ADAPTATION TO HIGH ENVIRONMENTAL TEMPERATURES [KROVOOBRAZHCENIE ZDOROVYKH LIUDEI V USLOVIAKH ARIDNOI ZONY TURKMENII. II - ISSLEDOVANIE S ISPOL'ZOVANIEM DOZIROVANNOI FIZICHESKOI NAGRUZKI LITS S KHOROSHEI I NEDOSTATOCHNOI ADAPTATSIIEI K VYSOKOI TEMPERATURE OKRUZHAIUSHCHEI SREDY]**

A. B. BABAEV, M. CH. CHARYEV, and G. A. GLEZER (Turkmenskii Meditsinskii Institut, Ashkhabad, Turkmen SSR; Nauchno-Issledovatel'skii Institut po Biologicheskim Ispytaniyam Khimicheskikh Soedinenii, Moscow, USSR) Kardiologiya (ISSN 0022-9040), vol. 24, Feb. 1984, p. 92-96. In Russian. refs

**A85-14934**

**VARIATION IN BLOOD LIPID LEVELS AND THE PREVALENCE OF HYPERPROTEINEMIA IN A GROUP OF MEN AGED 40-59 YEARS ENGAGED IN STRENUOUS MENTAL ACTIVITY (A REPEATED EXAMINATION) [IZMENENIE UROVNYA LIPIDOV V KROVI I RASPROSTRANENNOST' TIPOV GIPERLIPOPROTEIDEMII V GRUPPE MUZHCHIN 40-49 LET, ZANIATYKH NAPRIAZHENNYM UMSTVENNYM TRUDOM /POVTORNOE ISSLEDOVANIE/]**

S. V. CHERNIGOVSKAIA, N. A. KRUCHININA, and V. F. TRIUFANOV (Akademiia Nauk SSSR, Institut Fiziologii; Akademiia Meditsinskikh Nauk SSSR, Leningrad, USSR) Kardiologiya (ISSN 0022-9040), vol. 24, Feb. 1984, p. 79-83. In Russian. refs

**A85-14935**

**TOLERANCE FOR PHYSICAL LOAD AND SOME CHARACTERISTICS OF HEMODYNAMIC SUPPORT IN HEALTHY SUBJECTS AS A FUNCTION OF HEMODYNAMIC TYPE [TOLERANTNOST' K FIZICHESKOI NAGRUZKE I OSOBENNOSTI EE GEMODINAMICHESKOGO OBESPECHENIIA U ZDOROVYKH LIUDEI V ZAVISIMOSTI OT TIPA GEMODINAMIKI]**

A. A. DZIZINSKII, B. A. CHERNIAK, S. G. KUKLIN, and A. A. FEDOTCHENKO (Irkutskii Institut Uovershenstvovaniia Vrachei, Irkutsk, USSR) Kardiologiya (ISSN 0022-9040), vol. 24, Feb. 1984, p. 68-73. In Russian. refs

Several basic hemodynamic parameters were monitored in 113 normal male subjects aged 20 to 59 yr, at rest and during ergometric exercise on bicycles. Measurements of hemodynamic response were made by tetrapolar chest rheography. It is found that the capacity for physical exercise among the test subjects was dependent on both age and hemodynamic type. Subjects with hyperkinetic circulation had the greatest capacity; while those with hypokinetic circulation had the smallest capacity for exercise. An evaluation of blood pressure levels, heart rate patterns, stroke

and cardiac indices during the exercise indicated that cardiovascular function was more efficient in subjects with eukinetic or hyperkinetic circulation patterns and that this contributed to their increased capacity for physical exercise. I.H.

**A85-14936**

**PERIODIC RESPIRATION AND DISTURBANCES IN CARDIAL ACTIVITY DURING SLEEP IN PATIENTS WITH ISCHEMIC HEART DISEASE [PERIODICHESKOE DYKHANIE I NARUSHENIIA SERDECHNOI DEIATEL'NOSTI VO VREMIA SNA U BOL'NYKH ISHEMICHESKOI BOLEZN'IU SERDTSIA]**

G. A. VARONETSKAS and D. I. ZHEMAITITE (Kaunasskii Meditsinskii Institut, Palanga, Lithuanian SSR) Kardiologiya (ISSN 0022-9040), vol. 24, Feb. 1984, p. 60-65. In Russian. refs

**A85-14937**

**THE EFFECT OF EMOTIONAL STRESS ON THE SYSTEM OF HEMOSTASIS IN PATIENTS WITH CORONARY ATHEROSCLEROSIS [VLIANIE EMOTSIONAL'NOGO NAPRIAZHENIIA NA SISTEMU GEMOSTAZA U BOL'NYKH KORONARNYM ATEROSKLEROZOM]**

E. I. SOKOLOV, T. P. KHOVANSKAIA, I. V. NOVIKOVA, and M. V. BALUDA (Moskovskii Meditsinskii Stomatologicheskii Institut; Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR) Kardiologiya (ISSN 0022-9040), vol. 24, Feb. 1984, p. 56-60. In Russian. refs

**A85-14938**

**THE PHARMACODYNAMICS OF A NEW BETA-BLOCKER CORGARD (NADOLOL) IN PATIENTS WITH STRESS ANGINA [FARMAKODINAMIKA NOVOGO BETA-BLOKATORA KORGARDA /NADOLOLA/ U BOL'NYKH SO STENOKARDIEI NAPRIAZHENIIA]**

S. A. NIKOLENKO, V. I. METELTSIA, V. A. NAZARENKO, S. I. MARTSEVICH, and T. V. KULIKOVA (Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR) Kardiologiya (ISSN 0022-9040), vol. 24, Feb. 1984, p. 14-18. In Russian. refs

**A85-14939**

**THE FUNCTIONAL STATE OF THE CARDIOVASCULAR SYSTEM IN THE PROCESS OF ADAPTATION TO THE INTERACTION OF INDUSTRIAL FACTORS [FUNKTSIONAL'NOE SOSTOIANIE SERDECHNO-SOSUDISTOI SISTEMY V PROTSESSE ADAPTATSII K VOZDEISTVIU PROIZVODSTVENNYKH FAKTOROV]**

N. D. IZMAILOVA, N. P. KARKHANIN, and T. I. BONDARENKO (Kuibyshevskii Nauchno-Issledovatel'skii Institut Gigieny, Kuibyshev, USSR) Gigiena i Sanitariia (ISSN 0016-9900), March 1984, p. 17-19. In Russian. refs

The results of cardiological examinations of 626 workers exposed to a complex of occupational factors associated with monotonous conveyor labor are presented. The primary response of the cardiovascular system to the occupational exposure was first observed in subjects who had been on the job less than two years. The response manifested itself in the following symptoms: hyperkinetic circulation; systolic hypertension associated with an increased hemodynamic beat; and a phase syndrome of myocardial hyperdynamia. In subjects with work records ranging from two to five years, adaptation eliminated the disturbances. For workers on the job over five years, a decreased tolerance for physical loads was found, as well as phase hyperdynamia with an increased mean value of dynamic pressure due to the rise in peripheral vascular resistance. I.H.



A85-14942

**THE PERFORMANCE OF THE OPERATORS OF HEAT AND ELECTRIC POWER PLANTS WORKING 12-HOUR DAY AND NIGHT SHIFTS [RABOTOSPOSOBNOST' OPERATOROV TETS DNEVNOI I NOCHNOI SMEN PRI 12-CHASOVOI IKH PRODOLZHITEL'NOSTI]**

A. O. NAVAKATIKIAN, V. V. KALNISH, and V. B. LASTOVCHENKO (Kievskii Nauchno-Issledovatel'skii Institut Gigieny Truda i Profzabolevani, Kiev, Ukrainian SSR) Gigiena i Sanitariia (ISSN 0016-9900), March 1984, p. 88, 89. In Russian.

A85-14943

**CLINICAL AND PHYSIOLOGICAL CHARACTERISTICS OF THE CONTACT ACTION OF HIGH-FREQUENCY ULTRASOUND [KLINIKO-FIZIOLOGICHESKIE OSOBENNOSTI KONTAKTNOGO DEISTVIA VYSOKOCHASTOTNOGO UL'TRAZVUKA]**

V. P. ZOTKINA and V. A. KOROLEVA (Moskovskii Nauchno-Issledovatel'skii Institut Gigieny, Moscow, USSR) Gigiena i Sanitariia (ISSN 0016-9900), Feb. 1984, p. 85-87. In Russian. refs

A85-14945

**PROVISION OF FEMALE WORKERS IN HOTHOUSES WITH VITAMINS C, B1 AND B2 [OBESPECHENNOST' ORGANIZMA RABOTNITS TEPLITS VITAMINAMI C, B1 I B2]**

V. V. SVIATOSLAVOVA and A. G. GERMASHEV (Nauchno-Issledovatel'skii Institut Sel'skoi Gigieny, Saratov, USSR) Gigiena i Sanitariia (ISSN 0016-9900), Feb. 1984, p. 59-61. In Russian. refs

A85-14948

**ESTABLISHING NORMS FOR HUMAN PERFORMANCE WITH ALLOWANCE FOR MEDICAL AND TECHNICAL SUPPORT [NORMIROVANIE RABOTOSPOSOBNOSTI S UCHETOM MEDIKO-TEKHNIЧЕСКОГО ОБСЛЕПЕНИЯ УСЛОВИЙ ДЕЯТЕЛЬНОСТИ ЧЕЛОВЕКА]**

V. A. MOZIN Voenno-Meditsinskii Zhurnal (ISSN 0026-9050), March 1984, p. 51, 52. In Russian.

A85-14949

**X-RAY DIAGNOSIS OF DISORDERS OF THE RIB RESPIRATION MECHANISM [RENTGENODIAGNOSTIKA RASSTROISTV REBERNOGO MEKHANIZMA DYKHANIYA]**

I. S. AMOSOV, P. P. FIRSOVA, V. A. DEGTIAREV, I. G. BELOKRYLOVA, N. K. SILANTEVA, and L. P. BAGASHVILI Voenno-Meditsinskii Zhurnal (ISSN 0026-9050), March 1984, p. 39-43. In Russian. refs

A85-15565

**NEUROPHYSIOLOGICAL CORRELATES FOR IDEOMOTOR STRESS IN ATHLETES [O NEIROFIZIOLOGICHESKIKH KORRELIATAKH IDEOMOTORNOGO NAPIAZHENIYA SPORTSMENA]**

A. B. KOGAN, P. N. ERMAKOV, and A. B. POROSHENKO (Rostovskii Gosudarstvennyi Universitet, Rostov-on-Don, USSR) Akademiia Nauk SSSR, Doklady (ISSN 0002-3264), vol. 278, no. 5, 1984, p. 1263, 1264. In Russian. refs

The results of electrophysiological examinations of twelve athletes (aged 18-30 years) engaged in karate are discussed. It is shown that all the athletes exhibited unique patterns of brain electrical activity when imaging various types of karate movements (blows with the feet and arms). The electrical activity was measured by EEG in the symmetrical, central, and occipital regions of the left and right brain hemispheres, and took the form of high-amplitude waves (80-350 microvolts) which had a degree of regularity similar to certain types of paroxysmal of psychomotor activity. An analysis of the evoked potentials recorded during periods of paroxysmal brain activity showed that the rhythms of the potentials corresponded to the visual mean evoked potentials of patients with background epileptiform psychomotor activity. Examples of the electroencephalograms for six of the most highly trained karate athletes examined in the study are provided. I.H.

A85-15823

**DISEASE AND INJURY AS A RESULT OF SPORTS ACTIVITIES (2ND REVISED AND ENLARGED EDITION) [ZABOLEVANIYA I POVREZHDENIYA PRI ZANIATIIAKH SPORTOM /2ND REVISED AND ENLARGED EDITION/]**

A. G. DEMBO, ED. Leningrad, Izdatel'stvo Meditsina, 1984, 304 p. In Russian. No individual items are abstracted in this volume.

Results from a series of investigations of the pathology of sports injuries and sports related illness are presented. Among the topics discussed are: the susceptibility of athletes to sports-induced disease; the sports-related diseases of the cardiovascular system; and the diseases of the respiratory system. Consideration is also given to: renal urinary disease and sports; diseases of the digestive system; physiological changes in the blood as a result of strenuous exercise, and the sports-related diseases and injury to human neurological systems. I.H.

A85-15950

**THE EFFECT OF THE ANTIOXIDANT DIBUNOL ON THE COMPOSITION AND INTENSITY OF PEROXIDATION OF BLOOD LIPIDS IN PATIENTS WITH ISCHEMIC HEART DISEASE [VLIYANIE ANTIKSIDANTA DIBUNOLA NA SOSTAV I INTENSIVNOST' PEREKISNOGO OKISLENIIA LIPIDOV KROVI BOL'NYKH ISHEMICHESKOI BOLEZNIU SERDTSA]**

M. I. SALNIKOV, V. A. BARSEL, and G. V. ARKHIPOVA (Akademiia Nauk SSSR, Institut Khimicheskoi Fiziki, Moscow, USSR) Akademiia Nauk SSSR, Doklady (ISSN 0002-3264), vol. 278, no. 3, 1984, p. 747-751. In Russian. refs

The effects of the pharmaceutical compound dibunol (2,6-ditributyl-4-methylphenoliunol) on the extent and intensity of blood lipid peroxidation in patients with ischemic heart disease is studied experimentally. The patients were divided into four functional classes according to age and type of disease. All patients received stationary and ambulatory care accompanied by vasodilator, beta-blocker, and calcium antagonist medications. The effective dose of the dibunol was 1600 ml administered four times daily over a period of 18-21 days. The full results of the experiment are given in a series of tables. It is concluded that dibunol significantly changes the constitution of blood lipids and thus may represent an effective method for reducing the harmful effects of blood lipid accumulation associated with atherosclerotic disease. I.H.

N85-12549 United Kingdom Atomic Energy Authority, Risley (England).

**DEPOSITION IN THE HUMAN LUNG DURING RESPIRATION OF SMALL PARTICLES SUSPENDED IN THE AIR**

W. FINDEISEN 18 Jul. 1984 18 p refs Transl. into ENGLISH of "Über das absetzen kleiner, in der luft suspendierter teilchen in der menschlichen lunge bei der atmung" West German report (BLL-RISLEY-TR-5021-(9091.9F)) Avail: British Library Lending Div., Boston Spa, England

The number of particles of an aerosol that are filtered out at various points in the bronchial tree during passage through the airways of the human lung were examined. Filtering out occurs because the particles are deposited and adhering to the walls of the bronchi and bronchioles as a result of four processes. A solution for the problem of pulmonary inhalation only in rough terms and on a quantitative basis was investigated. The dimensions of an aerosol particle its effect to be deposited in large numbers in the manner described at various points in the lungs to be effective are examined. E.A.K.

**N85-12550#** California Univ., Davis. Dept. of Physical Education.

**THE ROLE OF PHYSICAL AND PHYSIOLOGICAL CAPACITIES AND THEIR MODIFICATION ON THE TOLERANCE TO VARIOUS STRESS EXPERIENCED BY AIR FORCE PERSONNEL Final Report**

E. BERNAUER, P. A. MOLE, and W. C. ADAMS 31 Jun. 1984 160 p

(Contract AF-AFOSR-3510-78)

(AD-A145779; AFOSR-84-0787TR) Avail: NTIS HC A08/MF A01 CSCL 06S

The final report addresses advances in anthropometric and physical conditioning that will improve physical fitness and orthostatic tolerance related to improvement in handling high sustained G (HGS) stress. Topics include: (1) Man, exercise and orthostasis, (2) Animal model response to HGS; and Man, thermal stress and physical performance. Five years of work are condensed in the report. GRA

**N85-12551#** Kansas Univ., Lawrence.

**MECHANISMS OF OXYGEN TOXICITY AND METHODS OF PROTECTION Final Report, 15 Oct. 1975 - 15 Oct. 1978**

M. D. FAIMAN 13 Aug. 1984 8 p

(Contract N00014-75-C-0160)

(AD-A145830) Avail: NTIS HC A02/MF A01 CSCL 06T

The mechanism by which oxygen causes convulsions is not clear. Although man's biochemical changes in brain have been reported to occur as a result of oxygen exposure, these changes are not necessarily the cause of oxygen-induced convulsions. From in vivo studies in mice, inhibition of brain energy metabolism was not found. Furthermore, although oxygen caused an increased oxidation of pyridine nucleotides, the decrease in both NADPH and NADH in cerebral cortex was not related to the susceptibility to mice to oxygen convulsions. GABA in brain cortex was decreased by oxygen, however, this decrease did not influence the susceptibility of mice to oxygen convulsions. The most effective CNS protectants seem to be those agents containing a disulfide bridge in their molecular structure, and which can be reduced to thiols. Since thiols are good free radical scavengers, free radicals may be the initial event in provoking the insult to produce oxygen convulsions. GRA

**N85-12552#** Naval Health Research Center, San Diego, Calif. **CARDIOVASCULAR DISEASE AMONG U.S. NAVY PILOTS Interim Report**

A. HOIBERG Jul. 1984 17 p

(AD-A145871; NAVHLTHRSCHC-84-27) Avail: NTIS HC A02/MF A01 CSCL 06J

This study's objectives were: (1) to determine the influence of age on cardiovascular disease (CVD) incidence among U.S. Navy pilots diagnosed with CVD during a 12.5-year time period (n = 150); (2) to examine pilots' occupational variables as risk factors of CVD, and (3) to identify precursory diseases associated with CVD incidence. Results showed a direct relationship between CVD incidence and the risk factor of age. Also, pilots on the average were more than three years younger at the time of CVD onset than other Navy officers. None of the occupational factors was associated with CVD incidence although fighter pilots had the highest rates of acute myocardial infarction and chronic ischemic heart disease. Angina pectoris was most frequently observed as a precursory disease of chronic ischemic heart disease, and several behaviorally related disorders (e.g., alcoholism) occurred most frequently with hypertension. Subsequent research should include all U.S. military pilots to provide a larger population in which to examine the influence on CVD incidence of such occupational factors as high performance aircraft. Also recommended was the implementation of an intervention program designed to modify the life styles of pilots who had been hospitalized for hypertension or such behaviorally related disorders as obesity and alcoholism.

Author (GRA)

**N85-12553#** New York Univ., New York. Neuromagnetism Lab. **VISUALLY EVOKED RESPONSES FROM NON-OCCIPITAL AREAS OF THE HUMAN CORTEX Publication Report**

O. V. LOUNASMAA, S. J. WILLIAMSON, L. KAUFMAN, and R. TANENBAUM 1984 7 p

(Contract N00014-76-C-0568)

(AD-A146079; REPT-16) Avail: NTIS HC A02/MF A01 CSCL 06P

Visually evoked neuromagnetic responses from the central area of the cerebral cortex in addition to the usual responses from the occipital areas of primary visual cortex are observed when the velocity of a moving grating pattern was modulated sinusoidally. The source of the central field has different functional properties than the source in primary sensory cortex. The position, depth, and orientation of the source are consistent with it lying in the Rolandic fissure near or in the eye representation area of motor cortex. GRA

**N85-12554#** Naval Health Research Center, San Diego, Calif. **EFFECT OF PHYSICAL WORK AND SLEEP LOSS ON RECOVERY SLEEP Final Report**

P. NAITOH, C. E. ENGLUND, D. H. RYMAN, and J. A. HODGDON Aug. 1984 22 p

(Contract DA PROJ. F58-528)

(AD-A146082; NAVHLTHRSCHC-84-30) Avail: NTIS HC A02/MF A01 CSCL 06S

The effect of exercise and sleep loss on sleep was studied in four groups of young, physically fit, well-trained U.S. Marine Corps male volunteer subjects. In the first study, Study 1, ten pairs of Marines were observed. One member of each pair was assigned to an exercise routine and walked on a treadmill in full combat gear at a speed that induced an elevated heart rate corresponding to 30% of the individual's VO<sub>2</sub> max. Exercise periods lasted half an hour per hour for two 17-hr long periods of continuous work, designated CW1 and CW2. The two CW episodes were separated by a 3-hr nap. Individuals assigned the exercise routine spent the second half of each hour in the CW period performing cognitive tasks using a computer terminal. The remaining member of each pair was assigned to a non-exercise, control routine. Study 1 consisted of two routines and data on the participants and were grouped as follows: (1) Nap/Exercise, and (2) Nap/No Exercise. In a second study, Study 2, eight pairs of Marines participated. In Study 2 the experimental protocol was identical with Study 1 with the exception that neither the exercising subject nor the control subject were permitted to nap between CW1 and CW2. GRA

**N85-12555#** New York Univ., New York. Neuromagnetism Lab. **EVIDENCE FOR MULTIPLE AREAS IN THE HUMAN AUDITORY CORTEX Publication Report**

M. PELIZZONE, S. J. WILLIAMSON, and L. KAUFMAN 1984 6 p

(Contract N00014-76-C-0568)

(AD-A146086; AD-E000599; REPT-18) Avail: NTIS HC A02/MF A01 CSCL 06P

Neuromagnetic measurements of the transient responses to tone burst stimuli of different frequencies and of the response evoked by amplitude modulated tones in the steady state paradigm are compared on the same subjects. The activity underlying the dominant 100 ms component of the transient response to a tone burst is insensitive to the frequency of the tone. The activity evoked in the steady state paradigm is tonotopically organized and its source is shifted laterally from that of the tone bursts. These results show that it is possible with the neuromagnetic measurements to differentiate spatially and functionally different regions across the human auditory cortex. GRA

## **N85-12556# Naval Health Research Center, San Diego, Calif. DIFFERENCES IN HEALTH RISKS BY AIRCRAFT MODEL AMONG US NAVY PILOTS**

A. HOIBERG Aug. 1984 19 p  
(Contract AF PROJ. F58528)  
(AD-A146147; NAVHLTHRSCHC-84-28) Avail: NTIS HC  
A02/MF A01 CSCL 06E

The purpose of this study was to identify health risks associated with eight aircraft models in a population of U.S. Navy pilots (n = 22,245) during a 12.5-year time period. Results showed that pilots in the trainer/miscellaneous group (or = 35 years of age) had significantly higher hospitalization rates than other pilot groups for almost all diagnoses whereas reconnaissance pilots were distinguished from others by lower total hospitalization rates. Younger helicopter pilots had significantly higher hospitalization rates for joint diseases than four other pilot groups and significantly higher rates for nervous system disorders than attack and patrol/antisubmarine groups. Explanations for these and mortality rate results were provided by examining the influence of selection and retention criteria; age, experience, and exposure; pilot population characteristics; and aircraft model assignments. GRA

## **N85-13458# Joint Publications Research Service, Arlington, Va. IMPACT OF SPACE MEDICINE ON EARTH-BASED MEDICINE: ACADEMICIAN YE. I. CHAZOV COMMENTS ON THE WORK IN ORBIT OF PHYSICIAN O. ATKOV**

A. ROMANOV In its USSR Rept.: Life Sci.: Biomed. and Behavioral Sci. (JPRS-UBB-84-026) p 1-2 5 Dec. 1984 Transl. into ENGLISH from Leningr. Pravda (Leningrad), 23 Aug. 1984 p 3  
Avail: NTIS HC A08

Medical research in space which has an appreciable impact on medicine on Earth was examined. The importance of learning the patterns of the cardiovascular system is the subject of many experiments in space. The effect of space factors to the cardiovascular system, the process of adaptation of a living organism to weightlessness, accelerations at lift-off and return of cosmonauts to Earth is discussed. E.A.K.

## **N85-13462# Joint Publications Research Service, Arlington, Va. RESULTS OF STUDY OF HYPOXIA PROBLEMS Abstract Only M. M. SEREDENKO In its USSR Rept.: Life Sci.: Biomed. and Behavioral Sci. (JPRS-UBB-84-026) p 139-140 5 Dec. 1984 Transl. into ENGLISH from Fiziologicheskii Zh. (Kiev), v. 30, no. 3, May - Jun. 1984 p 355-362 Original language document was announced in IAA as A84-39675**

Avail: NTIS HC A08

Hypoxic states were studied. The description of physiological properties of organisms during vital activity under conditions of a rarefied atmosphere and adaptation to mountain climate are addressed. Factors which cause mountain hypoxia and methods for its treatment are examined. The ontogenetic aspects of hypoxia and to anomalous response to hypoxia at early and late stages of ontogenesis are examined. Age related features of blood oxygenation mechanisms of the lungs are also studied. A theory is formulated on secondary tissue hypoxia as a result of the discrepancy between oxygen supply and tissue demands. E.A.K.

## **N85-13463# Joint Publications Research Service, Arlington, Va. REFLECTION OF LATERIZATION OF SOUND STIMULI IN EVOKED POTENTIALS OF HUMAN BRAIN Abstract Only**

A. NDINGA, O. P. TAIROV, and G. A. KULIKOV In its USSR Rept.: Life Sci.: Biomed. and Behavioral Sci. (JPRS-UBB-84-026) p 143 5 Dec. 1984 Transl. into ENGLISH from Fiziol. Cheloveka (Moscow), v. 10, no. 2, Mar. - Apr. 1984 p 265-271  
Avail: NTIS HC A08

The sensory organization in conscious acts is determined by spacial relationships of sensor signal sources and the body's orientation to it. Reflections of induced potentials of the human brain in lateralization of sound images created by introducing interaural retardation between dichotically presented sound stimuli are reported. It is indicated that subjective localization of sound images in space is reflected in features of mean induced potentials

in the human brain. It is found that specific binaural reactions in associative brain systems are connected to final stages of the organization of orientation reaction, such as determination of acoustical distance to the sound source. The prevalence of the central sound channel in such reactions is attributed to its key importance in the forming of such orientational reactions. E.A.K.

## **N85-13467\* National Aeronautics and Space Administration, Washington, D. C.**

### **AEROSPACE MEDICINE AND BIOLOGY, A CONTINUING BIBLIOGRAPHY WITH INDEXES**

Dec. 1984 68 p  
(NASA-SP-7011(265); NAS 1.21:7011(265)) Avail: NTIS HC  
\$7.00 CSCL 06E

This bibliography lists 197 reports, articles and other documents introduced into the NASA scientific and technical information system in November 1984. E.A.K.

## **N85-13468\*# Maryland Univ., College Park. Dept. of Neurology.**

### **MODULATION OF THE CYTOSOLIC ANDROGEN RECEPTOR IN STRIATED MUSCLE BY SEX STEROIDS**

N. E. RANCE and S. E. MAX 1982 20 p refs  
(Contract NAG2-100)

(NASA-CR-174173; NAS 1.26:174173) Avail: NTIS HC A02/MF  
A01 CSCL 06P

The influence of orchiectomy (GDX) and steroid administration on the level of the cytosolic androgen receptor in the rat levator ani muscle and in rat skeletal muscles (tibialis anterior and extensor digitorum longus) was studied. Androgen receptor binding to muscle cytosol was measured using H-3 methyltrienolone (R1881) as ligand, 100 fold molar excess unlabeled R1881 to assess nonspecific binding, and 500 fold molar excess of triamcinolone acetonide to prevent binding to glucocorticoid and progestin receptors. Results demonstrate that modification of the levels of sex steroids can alter the content of androgen receptors of rat striated muscle. Data suggest that: (1) cytosolic androgen receptor levels increase after orchiectomy in both levator ani muscle and skeletal muscle; (2) the acute increase in receptor levels is blocked by an inhibitor of protein synthesis; and (3) administration of estradiol-17 beta to castrated animals increases receptor binding in levator ani muscle but not in skeletal muscle. R.S.F.

## **N85-13469\*# George Washington Univ., Washington, D.C. Science Communication Studies.**

### **SPACE MEDICINE RESEARCH PUBLICATIONS: 1983-1984 Final Report**

J. L. SOLBERG and L. G. PLEASANT Washington NASA  
Dec. 1984 71 p  
(Contract NASW-3165)  
(NASA-CR-3860; NAS 1.26:3860) Avail: NTIS HC A04/MF A01  
CSCL 06E

A list of publications supported by the Space Medicine Program, Office of Space Science and Applications is given. Included are publications entered into the Life Sciences Bibliographic Database by The George Washington University as of October 1, 1984. R.J.F.

## **N85-13470# Brookhaven National Lab., Upton, N. Y. NON-INVASIVE TECHNIQUES FOR DETERMINING MUSCULOSKELETON BODY COMPOSITION**

S. H. COHN 1984 9 p refs Presented at Workshop on Advan. in NASA-Relevant Minimally Invasive Instr., Pacific Grove, Calif., 25 Apr. 1984  
(Contract DE-AC02-76CH-00016)  
(DE84-015718; BNL-35046; CONF-8404180-1) Avail: NTIS HC  
A02/MF A01

In vivo neutron activation analysis, combined with gamma spectrometry, has ushered in a new era of clinical diagnosis and evaluation of therapies, as well as investigation into and modelling of body composition in both normal individuals and patients suffering from various diseases and dysfunctions. Body composition studies have provided baseline data on such vital constituents as

nitrogen, potassium and calcium. The non-invasive measurement techniques are particularly suitable for study of the musculo-skeletal changes in body composition. Of particular relevance here is the measurement of calciums loss in astronauts during prolonged space flights. DOE

**N85-13471#** Research Inst. of National Defence, Stockholm (Sweden). Dept. 5.

**EXPERIMENTS WITH HYDROX AT 1.3 MPA (13 ATM)**

H. OERNHAGEN Jun. 1984 131 p refs In SWEDISH; ENGLISH summary (FOA-C-58014-H1; ISSN-0347-7665) Avail: NTIS HC A07/MF A01

During a heliox saturation to 1.3 MPa, 3 divers were exposed on mask to hydrox (98% hydrogen, 2% oxygen) for periods up to 60 min. Depth narcosis, pulmonary mechanics, physical working capacities, isobaric gas supersaturation, and blood chemistry were studied. Results produce no evidence that hydrogen has a harmful influence. Compared with helium, respiration performances are better with hydrogen because of its low density. Hydrogen has an obvious narcotics effect and cannot be used undiluted at depths below 200 m. Author (ESA)

**N85-13472#** Applied Physics Lab., Johns Hopkins Univ., Laurel, Md.

**HUMAN REACTIONS TO ELF (EXTREMELY LOW FREQUENCY) ELECTRIC AND MAGNETIC FIELDS. AN ANNOTATED BIBLIOGRAPHY OF CURRENT LITERATURE, FOURTH EDITION Final Report**

J. P. REILLY Jun. 1984 118 p Sponsored by Maryland Department of Natural Resources (PB84-230358; PPSP/JHU/PPSE-T-30) Avail: NTIS HC A06/MF A01 CSCL 06F

The annotated bibliography lists current literature (since 1960) which applied to human reactions to electric and magnetic fields from 10 Hz to 100 Hz, with an emphasis on power frequency fields. This includes direct experimental work with humans, epidemiological studies, works which use animal studies to draw inferences about human reactions, studies concerning human dosimetry, and works which discuss means for human protection. This bibliography was first published in July 1981. The fourth edition includes material obtained through June 1984. Author (GRA)

## 53

### BEHAVIORAL SCIENCES

Includes psychological factors; individual and group behavior; crew training and evaluation; and psychiatric research.

**A85-12747**

**THE EFFECT OF REDUNDANT CUES ON RETRIEVAL TIME**

J. R. SIMON and S. P. OVERMYER (Iowa, University, Iowa City, IA) Human Factors (ISSN 0018-7208), vol. 26, June 1984, p. 315-321. Research supported by the University of Iowa. refs

This experiment was concerned with determining the effect of redundant shape and color cues on retrieval time. Subjects saw a pair of stimuli presented sequentially on a screen and pressed one of two keys to indicate whether the second stimulus was the same as or different from the first. Stimuli for the color coding group differed only in terms of color (i.e., red, green, or yellow). Stimuli for the shape coding group differed only in terms of shape (i.e., circles, squares, or triangles). Stimuli for the redundant coding group were red, green, or yellow circles, squares, or triangles, with each shape having its own distinctive color. There was no clear-cut evidence that redundant coding facilitated retrieval of information from short-term memory. The redundant coding group (409 ms) was significantly faster than the color coding group (540 ms), but was not significantly faster than the shape coding group (456 ms). The difference between the shape and color coding

groups was not significant. Same responses were significantly faster than different responses (449 versus 487 ms). Author

**A85-13443#**

**JOB ATTITUDES OF AIR FORCE NAVIGATORS**

W. E. ROSENBACH and R. A. GREGORY (U.S. Air Force Academy, Colorado Springs, CO) IN: Institute of Navigation, Annual Meeting, 39th, Houston, TX, June 20-23, 1983, Proceedings. Washington, DC, Institute of Navigation, 1984, p. 1-5. USAF-supported research. refs

The results of a job attitude survey of 1,959 Air Force navigators are reported. Navigators perceived their jobs as being lacking in core job dimensions and consequently were not very satisfied with their jobs or their professional growth. Navigators in the Air Training Command and Tactical Air Command viewed their jobs as having more potential to be motivating and satisfying than those in other commands. When compared to Air Force pilots and engineers, navigators scored significantly lower on all variables except task identity and growth need strength; they were significantly higher on satisfaction with pay. Implications of results are discussed. Author

**A85-13587#**

**TRAINING AND DEVELOPMENT OF ENGINEERS AT THE AIR FORCE FLIGHT TEST CENTER - AN OVERVIEW**

R. E. HART (USAF, Flight Test Center, Edwards AFB, CA) AIAA, AHS, ASEE, Aircraft Design Systems and Operations Meeting, San Diego, CA, Oct. 31-Nov. 2, 1984. 6 p. (AIAA PAPER 84-2528)

Training and development of engineers is a major undertaking for the 6520 Test Group at the Air Force Flight Test Center. Guidance and policy regarding training is provided in the Master Training Plan. The plan evolved as a result of some training and development deficiencies within the organization. This paper comments on means for identifying training deficiencies and discusses changes made to improve training and development of engineers at the Flight Test Center. The paper also briefly addresses such related items as why training is needed, assessing training needs, and preventing obsolescence. Author

**A85-13616\*** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

**VISUAL SLANT MISPERCEPTION AND THE 'BLACK-HOLE' LANDING SITUATION**

J. A. PERRONE (NASA, Ames Research Center, Moffett Field, CA) Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 55, Nov. 1984, p. 1020-1025. Previously announced in STAR as N84-16795. refs

A theory which explains the tendency for dangerously low approaches during night landing situations is presented. The two-dimensional information at the pilot's eye contains sufficient information for the visual system to extract the angle of slant of the runway relative to the approach path. The analysis depends upon perspective information which is available at a certain distance out from the airport, to either side of the runway edgelights. Under black hole landing conditions, however, this information is not available, and it is proposed that the visual system use instead the only available information, the perspective gradient of the runway edgelights. An equation is developed which predicts the perceived approach angle when this incorrect parameter is used. The predictions are in close agreement with existing experimental data. E.A.K.

**A85-13749**

**PSYCHOLOGICAL SELECTION OF PILOTS AND COSMONAUTS [PSIKHOLOGICHESKII OTBOR LETCHIKOV I KOSMONAVTOV]**

V. A. BODROV, V. B. MALKIN, B. L. POKROVSKII, and D. I. SHPACHENKO Moscow, Izdatel'stvo Nauka (Problemy Kosmicheskoi Biologii. Volume 48), 1984, 264 p. In Russian. refs

The historical background of the psychological selection of pilots and cosmonauts is outlined, and the current status of this type of

selection is discussed. Requirements and methods of psychological selection are considered, with particular attention given to experimental-psychological and EEG techniques, and mathematical methods for the development and evaluation of selection methods. Psychological selection is examined in relation to pilot and cosmonaut performance, and future directions in psychological selection are noted. B.J.

A85-13909

# THE PERCEPTION OF THREE-DIMENSIONAL STRUCTURE FROM RIGID AND NONRIGID MOTION

J. T. TODD (Brandeis University, Waltham, MA) Perception and Psychophysics (ISSN 0031-5117), vol. 36, no. 2, Aug. 1984, p. 97-103. refs

The ability of observers to perceive structure from motion was examined for rigid and nonrigid transformations under both parallel and polar projection. The accuracy of form perception was evaluated by asking observers to discriminate among a series of computer-generated surfaces that varied in curvature. The results demonstrated that the accuracy of an observer's judgments is unaffected by the rigidity of an object's motion or the type of projection with which it is presented. These results are discussed in relation to current algorithms for computing structure from motion that have recently been described in the literature. Author

A85-14599

# ANALYSIS OF FREQUENCY VARIATIONS OF NEURON DISCHARGES IN THE HUMAN BRAIN DURING THE SINGLE EXECUTION OF PSYCHOLOGICAL TESTS [ANALIZ IZMENENII CHASTOTY RAZRIADOV NEIRONOV MOZGA CHELOVEKA V KHODE ODNOKRATNOGO VYPOLNENIIA PSIKHOLOGICHEKIKH PROB]

IU. L. GOGOLITSYN (Akademii Meditsinskikh Nauk SSSR, Leningrad, USSR) and S. B. PAKHOMOV Fiziologiya Cheloveka (ISSN 0131-1646), vol. 10, Sept.-Oct. 1984, p. 796-812. In Russian. refs

A method involving the decomposition of current-frequency patterns in different tests into individual components is used to study the frequency variations of neuron discharges during the single execution of psychological tests. Preliminary results obtained with this method are in good agreement with Bekhtereva's theory concerning the psychic activity of the cortico-subcortical structural-functional system with links of different degrees of rigidity. B.J.

A85-14947

# THE EFFECT OF NOISE ON THE PROCESSING OF INFORMATION IN CONNECTION WITH SOME ASPECTS OF NEURODYNAMICS [VLIANIE SHUMA NA PROTSESSY PERERABOTKI INFORMATSII V SVIAZI S OSOBENNOSTAMI NEIRODINAMIKI]

L. A. OLESHKEVICH and ZH. G. SIDORENKO (Kievskii Nauchno-Issledovatel'skii Institut Obshchei i Kommunal'noi Gigieny, Kiev, Ukrainian SSR) Gigiena i Sanitariia (ISSN 0016-9900), Feb. 1984, p. 16-19. In Russian. refs

The effect of noise on information treatment processes in man is studied experimentally. A total of 40 male students were subjected to wide-band noise levels of 80 dBs and intellectual functions were evaluated by means of tests requiring the recognition of symbolic relationships. It was found that individuals with a lower level of nervous system mobility were more susceptible to the negative effects of noise on information processing functions. I.H.

A85-15172

# STRESS AND ACCIDENTS IN AVIATION

R. GREEN (RAF, Institute of Aviation Medicine, Farnborough, Hants., England) International Journal of Aviation Safety (ISSN 0264-6803), vol. 2, Sept. 1984, p. 172-174. refs

Three types of stress are described: environmental stress, acute reactive stress, and domestic or life stress. Each of these is discussed and the evidence relating the stress to accidents is evaluated. This evidence is drawn from laboratory experiments,

surveys, and accident and incident reports. It is concluded that there is good reason to link some forms of stress with accidents; possible ameliorative measures are suggested. Author

A85-15173

# PERSONALITY FACTORS IN AVIATION

E. W. FARMER (RAF, Institute of Aviation Medicine, Farnborough, Hants., England) International Journal of Aviation Safety (ISSN 0264-6803), vol. 2, Sept. 1984, p. 175-179. refs

The relevance of personality differences to the flying task is discussed. Consideration is given to problems of pilot performance, liability to accident involvement, and flight crew interaction. Possible applications of research findings are suggested. Author

N85-12557# Carnegie-Mellon Univ., Pittsburgh, Pa. Dept. of Psychology.

# COGNITIVE COORDINATE SYSTEMS: ACCOUNTS OF MENTAL ROTATION AND INDIVIDUAL DIFFERENCES IN SPATIAL ABILITY

M. A. JUST and P. A. CARPENTER Sep. 1984 58 p  
(Contract N00014-82-C-0027)  
(AD-A146149; TR-84-1-ONR) Avail: NTIS HC A04/MF A01  
CSCL 05J

Strategic differences in spatial tasks can be explained in terms of different cognitive coordinate systems that subjects adopt. The strategy of mental rotation (of the type used in most mental rotation experiments and in some psychometric tests of spatial ability) uses a coordinate system defined by the standard axes of our visual world (i.e., horizontal, vertical, and depth axes). Within this strategy, rotations are performed around one or more of the standard axes. The paper provides a detailed theoretical account of the mental rotation of individuals of low and high spatial ability as they solve problems taken from psychometric tests. The theory is instantiated as two related computer simulation models that not only solve the problems, but also match the response times for the two groups. The simulation models contain modularized units of procedural knowledge called productions, that select and execute the appropriate actions at each knowledge state. Small localized differences between the two models simulate the large quantitative and qualitative differences between the two groups of subjects. GRA

N85-12558# Smith-Kettlewell Inst. of Visual Sciences, San Francisco, Calif.

# VISUAL SELECTIVE ATTENTION Annual Scientific Report

K. NAKAYAMA 30 Mar. 1984 4 p  
(Contract AF-AFOSR-0320-83)  
(AD-A146220; AFOSR-84-0774TR) Avail: NTIS HC A02/MF A01  
CSCL 05J

This technique has been used to differentially localize neural activity associated with sinusoidal grating onset and offset in different evidence that the field potentials recorded on the surface of the occipital lobe originate in an area other than the primary visual cortex. Because current source density analysis has such great ability to localize the origins of visual evoked potentials, this technique can also be applied to examine the origin of attention-related potentials. It is expected that the results of this study will aid in the interpretation of event-related potentials in humans. GRA

N85-12559# Illinois Univ., Champaign. Human Attention Research Lab.

# INDIVIDUAL DIFFERENCES IN AUTOMATIC AND CONTROLLED INFORMATION PROCESSING

P. L. ACKERMAN and W. SCHNEIDER Aug. 1984 22 p  
(Contract N00014-81-K-0034)  
(AD-A146245; AD-E750896; HARL-ONR-8401) Avail: NTIS HC A02/MF A01  
CSCL 05J

This report discusses prediction of individual differences in task performance during and subsequent to task practice. Previous literature indicates that pre-practice prediction of post-practice performance declines rapidly as time-on-task increases (for both simple and relatively complex tasks). Based on these effects,

traditional conceptions equating general intelligence with learning ability are inconsistent with performance data. The present approach views practice effects from an information processing perspective. The distinction between two major types of practice effects is outlined and discussed with respect to the automatic and controlled processing framework. The thrust of the discussion of individual differences and practice is predicted on a theoretical organization which draws together theories of the structure of cognitive/intellectual abilities with aspects of resource theory and elements of automatic and controlled processing. A unified theory of practice is presented. The theory relates ability and performance individual differences to task component consistency characteristics. The supporting data of an experimental study of individual differences in initial, intermediate, and final practiced performance stages are reported. G.R.A.

**A85-13080#** Hokkaido Univ., Sapporo (Japan).

**A MATHEMATICAL MODEL OF VISUAL PERCEPTION REGARDING PERIPHERAL VISION AND ITS APPLICATION TO THE HERMANN'S ILLUSION**

T. OYAMA, T. YAMANOI, T. YAMAZAKI, and M. KAWAGUCHI  
*In its* Bull. of the Fac. of Eng., Hokkaido Univ., No. 123 p 67-76  
Oct. 1984 refs In JAPANESE; ENGLISH summary  
Avail: NTIS HC A05/MF A01

Human visual perception is treated on the basis of the concepts of receptive field in physiology and in psychology. The distribution of receptive field on the retina is assumed by the fact that the central vision differs from the peripheral one. A function is introduced so that it fits the assumption. A mathematical model of visual output function is determined by the function introduced and by the model of the lateral inhibition. The deeper understanding of the mechanism of the Hermann's illusion is acquired by this model. Author

## 54

### MAN/SYSTEM TECHNOLOGY AND LIFE SUPPORT

Includes human engineering; biotechnology; and space suits and protective clothing.

**A85-12746\*** Naval Training Equipment Center, Orlando, Fla.  
**PILOT DIFFERENCES AND MOTION CUING EFFECTS ON SIMULATED HELICOPTER HOVER**

G. L. RICARD (U.S. Navy, Naval Training Equipment Center, Orlando, FL) and R. V. PARRISH (NASA, Langley Research Center, Hampton, VA) Human Factors (ISSN 0018-7208), vol. 26, June 1984, p. 249-256. refs

The effects that cues of aircraft motion, delays in visual scene, and movement of a ship model have on pilots' ability to hover a simulated helicopter near a destroyer-class ship were examined. Twelve pilots were tested in a within-subject factorial combination of fixed-base, moving-base, and G-seat conditions in which delays of 66 or 128 ms existed in the simulator's visual display and the pilots had to hover near a moving or stationary ship. Best control performance was seen under the moving-base conditions, whereas poorest control was associated with the fixed-base simulation. An intermediate level of performance was produced by the G-seat. In addition, visual delay affected control of the roll axis of the simulation, and interactions between pilots and motion cuing and visual delay were seen. Movement of the ship model had little effect. Author

**A85-13095#**

**SPACE SHUTTLE MANEUVERING UNIT DESIGN AND OPERATIONAL ACTIVITY - SOLAR MAX REPAIR MISSION**

W. W. BOLLENDONK (Martin Marietta Aerospace, Denver, CO) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 9 p. (IAF PAPER 84-160)

Skylab experiment M509 showed the feasibility that man with the aid of a 'back pack' could be expected to maneuver and perform work at otherwise inaccessible work stations within close proximity of a spacecraft. Problems related to the inspection of the Space Shuttle tiles and the conduction of repair work led to the concept of the Manned Maneuvering Unit (MMU). The MMU is a zero-gravity, self-contained backpack mobility system for astronaut extravehicular activity. It utilizes 24 fixed position gaseous nitrogen thrusters. Attention is given to a program history, a hardware overview, thermal control subsystem performance, propulsion subsystem performance, and control and maneuvering performance. The very successful activities of MMU during the STS-41B and 41C missions have clearly indicated that man can be expected to maneuver in space untethered. G.R.

**A85-13096#**

**LIFE SCIENCES RESEARCH FACILITIES FOR A SPACE STATION**

C. E. RUDIGER, JR. and T. M. OLCOTT (Lockheed Missiles and Space Co., Inc., Sunnyvale, CA) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 15 p. (IAF PAPER 84-161)

The Life Sciences Research Facility (LSRF) study had the objective to establish the most efficient analysis and design tools for the accommodation of LSRFs on space stations and platforms. The study had been conducted by an American aerospace company for NASA. It is pointed out that the detailed contract reports provide the ground work for NASA to proceed with space station LSRF planning. Samples of the work are discussed, taking into account roadmaps prepared to guide concept development and support programmatic sensitivity studies, a computer program called Microcomputer MISsion Integration and Accommodation Algorithm (MMISIAA), a parameter analysis, a tradeoff analysis, and conceptual design requirements. The MMISIAA program is to permit desktop manipulation of plant and animal vivarium and laboratory instrumentation design data. Issues and impacts from the study led to a number of conclusions and recommendations to focus space station planning and conduct future work in the areas of science, engineering, and programmatic which show design sensitivity. G.R.

**A85-13097#**

**SPACE STATION LIFE SUPPORT SYSTEMS - STATUS REPORT**

R. E. BREEDING and H. F. BROSE (United Technologies Corp., Environmental and Space Systems Dept., Windsor Locks, CT) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 7 p. refs (IAF PAPER 84-162)

In connection with a presidential decision announced in January 1984, NASA is to develop a permanently manned Space Station within a decade. The NASA Headquarters Space Station Concept Development Group (CDG) started its studies with a 'partially closed loop' Environmental Control and Life Support (ECLS) system. Oxygen and water were recycled, but food would be resupplied. The present investigation is concerned with the merit of various ECLS system options for Space Station, taking into account the budgetary pressure on the initial station versus the penalty of resupply on station operations. Attention is given to Space Station criteria, the ECLS loop closure, oxygen recycling, potable water recycling, wash water recycling, and the CDG ECLS evolution scenario. G.R.

**A85-13098#****LIFE SUPPORT SYSTEM FOR EUROPEAN SPACE STATION ELEMENTS**

A. I. SKOOG (Dornier System GmbH, Friedrichshafen, West Germany) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 8 p. Research supported by the European Space Agency and Bundesministerium fuer Forschung und Technologie. (IAF PAPER 84-164)

Design requirements and possible configurations for the environmental control and life support system (ECLSS) for a planned European Laboratory Module (LM) for either the Space Station or as a free-flyer are outlined. The ECLSS is required to have full compatibility with other space station systems and supply 2-4 crewmembers for up to 90 days. CO<sub>2</sub> and waste H<sub>2</sub>O would be directed to a centralized processing unit, while a Logistics Module would supply oxygen, nitrogen and water. The LM must also provide safe haven for up to 8 crewmembers for 21 days, including all survival gear and supplies and escape balls. All services must be fail safe. The LM, if operating in a free-flying mode, would need a safe haven in an accompanying Service Module. Further studies are needed to evaluate the impact of changing cabin pressures, to develop a contamination control system, and to design a trace gas contaminant detector. M.S.K.

**A85-13099\*#** National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.

**THE DEVELOPMENT STATUS OF CANDIDATE LIFE SUPPORT TECHNOLOGY FOR A SPACE STATION**

F. H. SAMONSKI, JR. (NASA, Johnson Space Center, Environmental Control and Life Support Systems Branch, Houston, TX) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 18 p. refs. (IAF PAPER 84-165)

The establishment of a permanently-manned Space Station has recently been selected as the next major step in the U.S. space program. The requirements of a manned operations base in space appear to be best satisfied by on-board Environmental Control/Life Support Systems (ECLSS) which are free from, or have minimum dependence on, use of expendables and the frequent earth resupply missions which are part of systems using expendables. The present investigation is concerned with the range of regenerative life support system options which NASA is developing to be available for the Space Station designer. An air revitalization system is discussed, taking into account devices concerned with the carbon dioxide concentration, approaches of CO<sub>2</sub> reduction, oxygen generation, trace contaminant control, and atmospheric quality monitoring. Attention is also given to an independent air revitalization system, nitrogen generation, a water reclamation system, a waste management system, applications of the technology, and future development requirements. G.R.

**A85-13101#****CONCEPT STUDY ON THE TECHNOLOGY OF CELSS**

K. NITTA (National Aerospace Laboratory, Chofu, Tokyo, Japan) and M. YAMASHITA (Tokyo, University, Tokyo, Japan) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 10 p. refs. (IAF PAPER 84-167)

The basic considerations regarding a Controlled Ecological Life Support System (CELSS) are examined, taking into account the continuous supply of oxygen, foods, and water. It is pointed out that the main purpose of CELSS is to provide environment control abilities similar to the functions of nature as atmospheric circulation, the sea, the rain, and the water flows on and under the surface of ground, and to decompose the waste materials. Attention is given to gas recycle systems, a water recycle system, a waste managements system, time phased mission sets, plant cultivation, algae cultivation, small animal breeding, fish breeding equipment, and preliminary hardware design. G.R.

**A85-13102#****'PLASMA 01' - APPLIANCE FOR HUMAN BLOOD COLLECTION AND PROCESSING DURING SPACE FLIGHTS**

R. FOLPRECHT, J. NEUZIL, L. STEPAN (Ceskoslovenska Akademie Ved, Prague, Czechoslovakia), R. KVETNANSKY, M. VIGAS, L. MACHO (Slovenska Akademia Vied, Endokrinologicky Ustav, Bratislava, Czechoslovakia), V. I. KOZARINOV, A. S. USAKOV, and A. D. NOSKIN (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984. 4 p. refs. (IAF PAPER 84-168)

One of the crucial problems of present-day space medicine is related to the determination of the admissibility threshold of man's stay in space, taking into account conditions concerning an absence of detrimental effects on health. Information regarding the physiological changes in astronauts can be obtained on the basis of an analysis of blood and urine samples. The present investigation is, therefore, concerned with equipment which makes it possible to take blood samples from astronauts during a space flight. Attention is also given to the preservation of blood plasma samples in the frozen state over the time period of the space flight. The designed system, called Plasma 01, consists of four separate functional units. G.R.

**A85-13284#****SPACE SUITS - TEN PERIODS OF EXTRAVEHICULAR ACTIVITY FROM THE SALYUT-7 SPACE STATION**

G. I. SEVERIN, I. P. ABRAMOV, A. S. BARER, and V. I. SVERTSHEK (Akademii Nauk SSSR, Sovet Interkosmos, Moscow, USSR) International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984, Paper. 14 p.

Considerable experience is being obtained regarding the performance characteristics involved in extravehicular activities (EVA) which are undertaken in the case of orbital stations. Space suits of a semirigid type are employed to perform EVA involving the Salyut-7 station as a base. The characteristics of such space suits are discussed, taking into account the life support system package, high pressurization, the space suit visor assembly designed for the protection of the eyes and the face of a cosmonaut from solar radiation, and the maintenance of a suitable microclimate inside the spacesuit. Operating experience obtained with these suits has confirmed the feasibility of a multiple use in the case of free-space EVAs. G.R.

**A85-13286#****SOME ORGANIZATIONAL ASPECTS OF WORK IN OPEN SPACE OF THE SALYUT-7 STATION CREWS**

S. E. SAVITSKAIA International Astronautical Federation, International Astronautical Congress, 35th, Lausanne, Switzerland, Oct. 7-13, 1984, Paper. 7 p.

Activities of cosmonauts during 10 EVAs from the Salyut 7 space station are summarized, together with the facilities in which they trained for the task. Biological samples were recovered from a container left outside exposed to space radiation. The cosmonaut retrieving the container passed it to a second cosmonaut half in the airlock. Two EVAs were performed by other cosmonauts to install an additional solar panel. The station was designed for the power upgrades. Several EVAs were required to identify problems with the propulsion manifolds and install new manifolds. Hand tools were tested during other EVAs, as were a device for hermetically sealing a fuel line and procedures for disassembling a solar panel. The main training facilities were a large water pool and a low pressure chamber. M.S.K.



A85-13532#

**A PILOT PERFORMANCE METHOD FOR VALIDATING VISUAL ATTACHMENTS TO FLIGHT SIMULATORS**

M. ARONSON (Aronson Industries, Orlando, FL) AIAA, AHS, ASEE, Aircraft Design Systems and Operations Meeting, San Diego, CA, Oct. 31-Nov. 2, 1984. 9 p. refs  
(AIAA PAPER 84-2438)

Currently evaluations of visual simulators are performed by either pilot opinion questionnaires or comparison of aircraft terminal performance. The approach here is to compare pilot performance in the flight simulator with a visual display to his performance doing the same visual task in the aircraft as an indication that the visual cues are identical. The A-7 Night Carrier Landing task was selected. Performance measures which had high pilot performance prediction were used to compare two samples of existing pilot performance data to prove that the visual cues evoked the same performance. The performance of four pilots making 491 night landing approaches in an A-7 prototype part task trainer were compared with the performance of 3 pilots performing 27 A-7E carrier landing qualification approaches on the CV-60 aircraft carrier. The results show that the pilots' performances were similar, therefore concluding that the visual cues provided in the simulator were identical to those provided in the real world situation. Differences between the flight simulator's flight characteristics and the aircraft have less of an effect than the pilots individual performances. The measurement parameters used in the comparison can be used for validating the visual display for adequacy for training.

Author

A85-13583#

**AIRPLANE DESIGNER'S CHECKLIST FOR OCCUPANT INJURY PREVENTION**

H. W. SMITH (Kansas, University, Lawrence, KS) AIAA, AHS, ASEE, Aircraft Design Systems and Operations Meeting, San Diego, CA, Oct. 31-Nov. 2, 1984. 7 p. refs  
(AIAA PAPER 84-2520)

Although the design techniques for injury protection are maturing, there are a large number of bewildering specification requirements that confront a designer of pilot's seats. This paper presents an 'inverted' checklist from an injury viewpoint. For example, clavicle fracture is a possible consequence of torso harness mislocation, and femur torsion-bending fracture may result from wind flail. A methodical checklist is presented which includes: seat stroking, seat positioning, helmet size, survivable volume, and other important structural design variables. Each of these factors are shown to be governed by specific configuration requirements.

Author

A85-13599

**A QUANTITATIVE EVALUATION OF HUMAN ACTIVITY IN MAN-MACHINE SYSTEMS [KOLICHESTVENNAIA OTSENKA DEIATEL'NOSTI CHELOVEKA V SISTEMAKH CHELOVEK-TEKNIKA]**

G. P. SHIBANOV Moscow, Izdatel'stvo Mashinostroenie, 1983, 264 p. In Russian. refs

Problems related to the analytical representation of the characteristics of man as an element of the man-machine system are examined with a view to developing an approach to the quantitative evaluation of human activity. Based on a systems approach, several mathematical models describing various aspects of human activity in man-machine systems are proposed. The basic principles of the evaluation of the efficiency of the human operator in man-machine systems are formulated and evaluation algorithms are presented.

V.L.

A85-13821

**DATA REDUCTION OF BODY SURFACE POTENTIAL MAPS BY MEANS OF ORTHOGONAL EXPANSIONS**

G. J. H. UIJEN, A. HERINGA (Radboud Hospital, Nijmegen, Netherlands), and A. VAN OOSTEROM (Nijmegen, Katholieke Universiteit, Nijmegen, Netherlands) IEEE Transactions on Biomedical Engineering (ISSN 0018-9294), vol. BME-31, Nov. 1984, p. 706-714. refs

Data reduction methods for use in body surface potential maps of the electrical activity of the heart are presented which are both based on the Karhunen-Loeve expansion: a one-step method expanded into a set of eigenvectors; and a two-step method which results in an expansion into two sets of eigenvectors. The eigenvector sets for each method are derived from recordings of the body surface potentials of 136 human subjects. The rms error of the representation with the one-step method was 47 microvolts. When the two-step method was applied using six eigenvectors in space and six eigenvectors in time, the error was 77 microvolts. It is concluded that the one-step method is preferable for the representation of body surface potential data within a given group, because of its lower rms error. When basis functions for a large population are required, however, both methods provide comparably accurate results. Several samples of reproduced body surface potential maps are provided.

I.H.

A85-13822

**THE LINEAR HOMEOMORPHIC SACCADIC EYE MOVEMENT MODEL - A MODIFICATION**

J. D. ENDERLE (North Dakota State University, Fargo, ND), J. W. WOLFE, and J. T. YATES (USAF, School of Aerospace Medicine, Brooks AFB, TX) IEEE Transactions on Biomedical Engineering (ISSN 0018-9294), vol. BME-31, Nov. 1984, p. 717-720. refs  
(Contract AF-AFOSR-83-0187)

The objective of this study was the modification of a linear homeomorphic horizontal saccadic eye movement model to a direct programming state-space representation through Laplace variable analysis about the operating point or initial eye position. The lateral and medial rectus muscle of each eye is modeled as a parallel combination of an active state tension generator with a viscosity and elastic element, connected to a series elastic element. The eyeball is modeled as a sphere connected to a viscosity and elastic element. Each of these elements is assumed to be ideal and linear.

Author

A85-14425

**A HYGIENIC ASSESSMENT OF OCCUPATIONAL NOISE AND VIBRATION [GIGIENICHESKOE NORMIROVANIE PROIZVODSTVENNYKH SHUMOV I VIBRATSII]**

G. A. SUVOROV, L. N. SHKARINOV, and E. I. DENISOV Moscow, Izdatel'stvo Meditsina, 1984, 240 p. In Russian. refs

The qualitative and quantitative characteristics of the effects of noise and vibrations on the human organism are examined. The principal techniques for determining dose-response relations and maximum limits for human exposure to noise and vibrations are discussed, taking into account both physical and nervous loads. A set of recommended standards for noise and vibration in the workplace is offered based on the technical data.

I.H.

A85-14941

**HYGIENIC SIGNIFICANCE OF NOISE ENTROPY [GIGIENICHESKOE ZNACHENIE ENTROPII SHUMA]**

A. V. KOLGANOV (Nauchno-Issledovatel'skii Institut Gigeny Truda i Profzabolevani, Donetsk, Ukrainian SSR) Gigena i Sanitariia (ISSN 0016-9900), March 1984, p. 82-84. In Russian. refs

Experimental results on the effects of industrial noise are presented which indicate that the hygienic value of noise entropy increases as the noise level (energy) decreases. It is concluded that the energy model reflecting frequency-intensive analysis in the auditory analyzer must be supplemented by an information model connected with structure-time analysis. The quantitative measure for hygienic assessment in the information model is signal entropy. The entropy of the noise signal makes a definite

contribution to the biological activity of noise even at very high levels (95-110 dB A). L.M.

**A85-14946**

**THE CHARACTERISTIC PROTECTIVE PROPERTIES OF MATERIAL IN WORKCLOTHES FROM OPTICAL RADIATION FROM INDUSTRIAL SOURCES [O KHARAKTERISTIKE ZASHCHITNYKH SVOISTV TKANEI SPETSODEZHDI OT OPTICHESKOGO IZLUCHENIIA PROIZVODSTVENNYKH ISTOCHNIKOV]**

L. A. GVOZDENKO, V. N. PRIMAK, N. S. SHISHKINA, L. S. BOGOMOLOVA, G. A. PUCHKOVSKAIA, and A. V. KOSOV (Kievskii Nauchno-Issledovatel'skii Institut Gigieny Truda i Profzabolevani; Akademiia Nauk Ukrainskoi SSR, Institut Fiziki, Kiev, Ukrainian SSR; Akademiia Nauk SSSR, Institut Biofiziki, Pushchino, USSR) *Gigiena i Sanitariia* (ISSN 0016-9900), Feb. 1984, p. 35-37. In Russian. refs

The results of experiments measuring the optical permeability of 29 samples of material used for protective work clothing are presented. The radiation levels were consistent with those found in many industries in the USSR, ranging from 302 to 400 nm (ultraviolet), 400 to 760 nm (visible), and 760 to 10,000 nm (infrared). The characteristics of secondary radiation generated by protective clothing as a result of downward energy flux absorption was also considered. The complete experimental results are presented in the form of a table. I.H.

**A85-15807**

**OPTIMAL CONTROL OF INSPIRATORY AIRFLOW IN BREATHING**

R. P. HAMALAINEN and A. SIPILA (Helsinki University of Technology, Espoo, Finland) *Optimal Control Applications and Methods* (ISSN 0143-2087), vol. 5, April-June 1984, p. 177-191. refs

This paper describes a new optimal control model for predicting the inspiratory airflow pattern in breathing. The dynamics of the mechanical lung-rib-cage system is described by a linear first-order equation. The physiological interpretation of the mathematical optimization criterion used in the model is the minimization of oxygen expenditure of the respiratory muscles together with the avoidance of movements with rapid changes in the flow rate. The optimal control analysis results in a relatively difficult two-point boundary value problem which is solved by multiple shooting techniques. The new criterion yields better predictions for breathing at rest than previous models. The most significant improvements are that this model is able to produce asymmetric inspiratory airflow patterns and to predict the effects of changes in the operating level and the elastance coefficient of the system. A modified version of the model is suggested which would be able to predict patterns of breathing during exercise as well. Author

**N85-12560#** Committee on Commerce, Science, and Transportation (U. S. Senate).

**AIRLINER CABIN AIR QUALITY**

Washington GPO 21 May 1984 4 p Rept. to accompany S. 197 presented to the Comm. on Com., Sci. and Transportation, 98th Congr., 2d Sess., 17 May 1984 (S-REPT-98-468; GPO-31-010) Avail: US Capitol, Senate Document Room

Air quality aboard commercial carriers was studied. Current Federal Aviation Administration procedures and regulations which are not adequate to ensure adequate fresh air in the cabins of commercial airliners are considered. The concern that equipment and procedures are not adequate to deal with smoke and toxic fumes from cabin fires were examined. The question as to whether the air quality in aircraft cabins conforms to nonaviation standards for locations that can be expected to accommodate large numbers of people in close proximity to one another is investigated. The seriousness of the study which is due to the fact that in an airliner cabin environment, an efficiently operating air conditioning system is an essential life support system. E.A.K.

**N85-12561\*#** George Washington Univ., Washington, D.C. **NUTRITIONAL MODELS FOR SPACE TRAVEL FROM CHEMICALLY DEFINED DIETS**

P. A. DUFOUR Washington NASA Nov. 1984 143 p refs (Contract NASW-3165) (NASA-CR-3850; NAS 1.26:3850) Avail: NTIS HC A07/MF A01 CSCL 06H

Human nutritional requirements are summarized, including recommended daily intake and maximum safe chronic intake of nutrients. The biomedical literature on various types of chemically defined diets (CDD's), which are liquid, formulated diets for enteral and total parenteral nutrition, is reviewed. The chemical forms of the nutrients in CDD's are detailed, and the compositions and sources of representative commercial CDD's are tabulated. Reported effects of CDD's in medical patients, healthy volunteers, and laboratory animals are discussed. The effects include gastrointestinal side effects, metabolic imbalances, nutrient deficiencies and excesses, and psychological problems. Dietary factors contributing to the side effects are examined. Certain human nutrient requirements have been specified more precisely as a result of long-term use of CDD's, and related studies are included. CDD's are the most restricted yet nutritionally complete diets available. B.W.

**N85-12562#** Vermont Univ., Burlington.

**THE EFFECTS OF HELICOPTER VIBRATION ON THE SPINAL SYSTEM** Final Scientific Report, Jul. 1982 - Sep. 1983

M. H. POPE, D. DONNERMEYER, D. G. WILDER, and M. HUNDAL Jul. 1984 59 p (Contract DAMD17-82-C-2153; DA PROJ. 3E1-62777-A-878) (AD-A146274) Avail: NTIS HC A04/MF A01 CSCL 06S

Initial work was performed to determine the objective correlates in vibration and posture as etiologic agents in low back pain in UH-1-H pilots. Existing pilot/UH-1-H cockpit relationships were measured and utilized in a UH-1-H cockpit simulator. Correlations were made between muscle EMG activity and force produced. Basic studies were performed to determine the effect of muscle fatigue on the muscle EMG activity. This basic work leads to work to be done studying the effects of the UH-1-H environmental factors on pain onset and duration. GRA

**N85-12563#** Naval Weapons Center, China Lake, Calif.

**THE HUMAN OPERATOR AND SYSTEM EFFECTIVENESS** Summary Report, Jun. 1982 - Jun. 1984

R. A. ERICKSON Jun. 1984 106 p (AD-A146326; NWC-TP-6541) Avail: NTIS HC A06/MF A01 CSCL 05E

This report develops the procedure to follow in producing a system effectiveness analysis, including the performance of the human operator(s) of the system. The report discusses the factors associated with each step in the procedure, including choice of measures of effectiveness, the form of system component performance data, and the characteristics of some mathematical models and analysis techniques. An example is used throughout the report to illustrate the guidelines. Both a simple listing, and a flow diagram summarize the procedures; more detailed guidelines are given in tables associated with steps in the procedure. GRA

**N85-13454#** Joint Publications Research Service, Arlington, Va. **CLIMATE-CHAMBER EXPERIMENTS TO IMPROVE PILOTS' WORK CONDITIONS** Abstract Only

In its USSR Rept.: Life Sci. Biomed. and Behavioral Sci. (JPRS-UBB-84-025) p 1 21 Nov. 1984 Transl. into ENGLISH from *Vozdushnyi Transport* (Moscow), 2 Aug. 1984 p 3 Avail: NTIS HC A07

An account is given of an experiment conducted for the study of civil aviation specialists' working conditions. Psychophysiological tests and experiments using microclimate chambers with modeling of actual flight conditions are given in order to study a subjects' performance of flight operations, and to monitor functional shifts occurring in their bodies in certain temperature and humidity conditions. The purpose of the experiment was to evaluate a subject's work capacity during a simulated eight hour flight. E.R.

**N85-13455#** Joint Publications Research Service, Arlington, Va.  
**MACHINE MECHANICS INSTITUTE BUILDS WALKING VEHICLE**  
**Abstract Only**

*In its* USSR Rept.: Life Sci. Biomed. and Behavioral Sci. (JPRS-UBB-84-025) p 43 21 Nov. 1984 Transl. into ENGLISH from Izv. (Moscow), 23 Aug. 1984 p 2  
 Avail: NTIS HC A07

A cross country vehicle which walks, rather than roll was developed. A driver started the engine and pressed a button, and the vehicle slowly walked out of a garage and then began to stride along. Its iron legs moved up and down smoothly. The walking vehicle is controlled by only three buttons: the middle button gives the command to go straight ahead, while the left and right ones determine the directions of turns. Many advances in electronics, biomechanics, machine science and computer technology were utilized in its design. Hydraulic systems - the vehicle's muscles - are activated on command of an electronic device. The vehicle is automatically maintained in a horizontal position even when it moves over very rugged terrain. Author

**N85-13456#** Joint Publications Research Service, Arlington, Va.  
**RECH-1 SPEECH SYNTHESIZER FOR MAN-MACHINE DIALOG**  
**Abstract Only**

O. GUSEV *In its* USSR Rept.: Life Sci. Biomed. and Behavioral Sci. (JPRS-UBB-84-025) p 60 21 Nov. 1984 Transl. into ENGLISH from Pravda (Moscow), 2 Sep. 1984 p 6  
 Avail: NTIS HC A07

An electronic device which can synthesize speech as well as comprehend it is described. The Rech'-1 is intended for spoken dialog with computers. The system reportedly is capable of functioning as an intermediate link between operators and large computers which control production processes or the automation of design work. An account is given of a dialog using the Rech'-1. The system is reported capable of responding to 200 command words and of synthesizing speech from a printed text, in both Russian and Ukrainian. To enable the device to understand spoken commands, a unit was developed which produces graphic representations of spoken words on paper. To prepare the Rech'-1 to understand his commands, an operator has to pronounce each word into a microphone only once. Each word is recorded in an on-line storage. An individual data link of sound images is thus created for each speaker. Author

**N85-13473\*#** McDonnell-Douglas Astronautics Co., Huntington Beach, Calif.

**THE HUMAN ROLE IN SPACE. VOLUME 1: EXECUTIVE SUMMARY Final Report**

Oct. 1984 27 p 3 Vol.  
 (Contract NAS8-35611)  
 (NASA-CR-171223; NAS 1.26:171223; MDC-H1295-VOL-1;  
 DR-4-VOL-1) Avail: NTIS HC A03/MF A01 CSCL 05H

The role and degree of direct involvement of humans required in future space missions were investigated. Criteria for allocating functional activities between humans and machines were established. The technology requirements, economics, and benefits of the human presence in space were investigated. R.S.F.

**N85-13474\*#** McDonnell-Douglas Astronautics Co., Huntington Beach, Calif.

**THE HUMAN ROLE IN SPACE. VOLUME 2: RESEARCH ANALYSIS AND TECHNOLOGY REPORT Final Report**

Oct. 1984 320 p refs 3 Vol.  
 (Contract NAS8-35611)  
 (NASA-CR-171224; NAS 1.26:171224; MDC-H1295-VOL-2;  
 DR-4-VOL-2) Avail: NTIS HC A14/MF A01 CSCL 05H

The human role in space was studied. The role and the degree of direct involvement of humans that will be required in future space missions are investigated. Valid criteria for allocating functional activities between humans and machines were established. The technology requirements, economics, and benefits of the human presence in space was examined. Topics discussed include: human qualifications for space activities; specific project

assessments; technology requirements and tasks; and generalization on human roles in space. E.A.K.

**N85-13475\*#** McDonnell-Douglas Astronautics Co., Huntington Beach, Calif.

**THE HUMAN ROLE IN SPACE. VOLUME 3: GENERALIZATIONS ON HUMAN ROLES IN SPACE Final Report, Oct. 1983 - Sep. 1984**

Oct. 1984 66 p 3 Vol.  
 (Contract NAS8-35611)  
 (NASA-CR-171225; NAS 1.26:171225; MDC-H1295-VOL-3;  
 DR-4-VOL-3) Avail: NTIS HC A04/MF A01 CSCL 05H

The human role in space was studied. The role and the degree of direct involvement of humans that will be required in future space missions, was investigated. Valid criteria for allocating functional activities between humans and machines were established. The technology requirements, economics, and benefits of the human presence in space were examined. Factors which affect crew productivity include: internal architecture; crew support; crew activities; LVA systems; IVA/EVA interfaces; and remote systems management. The accomplished work is reported and the data and analyses from which the study results are derived are included. The results provide information and guidelines to enable NASA program managers and decision makers to establish, early in the design process, the most cost effective design approach for future space programs, through the optimal application of unique human skills and capabilities in space. E.A.K.

**N85-13476#** General Physics Corp., Columbia, Md.

**HUMAN RELIABILITY DATA BANK: FEASIBILITY STUDY**

K. COMER, D. P. MILLER (Sandia Labs, Albuquerque, N. Mex.), and M. DONOVAN (General Physics Corp., Atlanta) 1984 9 p refs Presented at the Human Factors Soc. Ann. Meeting, San Antonio, 22 Oct. 1984

(Contract DE-AC04-76DP-00789)  
 (DE84-015215; SAND-84-1569C; CONF-841099-2) Avail: NTIS HC A02/MF A01

The US Nuclear Regulatory Commission and Sandia National Laboratories have been developing a plan for a human reliability data bank since August 1981. This research is in response to the data needs of the nuclear power industry's probabilistic risk assessment community. The three phases of the program are to: (1) develop the data bank concept; (2) develop an implementation plan and conduct a feasibility study; and (3) assist a sponsor in implementing the data bank. The program is now in Phase 2. The methods used in the feasibility study are described. Decisions to be made in the future regarding full scale implementation will be based, in part, on the outcome of this study. DOE

## 55

## PLANETARY BIOLOGY

Includes exobiology; and extraterrestrial life.

**A85-14523**

**INVESTIGATION OF CLAIMS FOR INTERSTELLAR ORGANISMS AND COMPLEX ORGANIC MOLECULES**

R. E. DAVIES, A. M. DELLUVA, and R. H. KOCH (Pennsylvania, University,, Philadelphia, PA) Nature (ISSN 0028-0836), vol. 311, Oct. 25, 1984, p. 748-750. refs

UV spectra gathered on interstellar absorption features by the OAO 2 and IUE spacecraft were examined for evidence of organic compounds which would bear on theories of life seeds having arrived on earth from interstellar space. Attention is given to UV wavelength absorptions by 16 substance/species, including tryptophan, e. coli, chlorella, trypsin, etc., which were determined in the laboratory. The absorption lines observed in the interstellar spectra could not be duplicated by the absorption lines associated with the protein-based laboratory specimens. It is concluded that

claims made by Hoyle, et al. (1975, 1977-80, 1982) that interstellar matter contains protein-rich substances are unfounded. M.S.K.

**A85-15949**

**THE FORMATION OF AMINO ACIDS AND THEIR AMIDES DURING THE DEFORMATION OF AMMONIUM SALTS OF CARBOXYLIC ACIDS UNDER HIGH PRESSURE [OBRAZOVANIE AMINOKISLOT I IKH AMIDOV PRI DEFORMATSII AMMONIINYKH SOLEI KARBONOVYKH KISLOT POD VYSOKIM DAVLENIEM]**

A. A. ZHAROV, E. V. KHOROSHILOVA, V. M. ZHULIN, and N. A. KRAVCHENKO (Akademiia Nauk SSSR, Institut Organicheskoi Khimii, Moscow, USSR) Akademiia Nauk SSSR, Doklady (ISSN 0002-3264), vol. 278, no. 3, 1984, p. 660-663. In Russian. refs

The reactions of ammonium salts of a series of unsaturated monobasic and dibasic acids and also mixtures of carboxylic acids with ammonium salts of inorganic acids have been studied under conditions of shear and high pressure. The principal characteristics of the synthesis of amino acids under these conditions are examined. The possible role of the reactions of this type in the chemical evolution of substances during the prebiological period is discussed in the light of the experimental results obtained.

V.L.

**A-1**

**ASTRONAUT PERFORMANCE**

- Psychological selection of pilots and cosmonauts --- Russian book p 45 A85-13749
- ATHLETES**
- Sports medicine p 37 A85-13594
- Echocardiograms of adolescent athletes p 40 A85-14928
- Neurophysiological correlatives for ideomotor stress in athletes p 42 A85-15565
- Disease and injury as a result of sports activities (2nd revised and enlarged edition) p 42 A85-15823
- ATROPHY**
- Atrophy and growth failure of rat hindlimb muscles in tail-cast suspension p 31 A85-14661
- ATTENTION**
- Visual selective attention [AD-A146220] p 46 N85-12558
- AUDITORY PERCEPTION**
- Evidence for multiple areas in the human auditory cortex [AD-A146086] p 43 N85-12555
- AUDITORY STIMULI**
- Evidence for multiple areas in the human auditory cortex [AD-A146086] p 43 N85-12555
- AUTOMATIC CONTROL**
- Individual differences in automatic and controlled information processing [AD-A146245] p 46 N85-12559

**B**

- BACK INJURIES**
- Airplane designer's checklist for occupant injury prevention [AIAA PAPER 84-2520] p 49 A85-13583
- BACTERIA**
- Nitrogen fixation by a methanogenic archaeobacterium p 34 A85-15432
- Dinitrogen fixation by a thermophilic methanogenic bacterium p 34 A85-15433
- BACTERIOLOGY**
- Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563
- BED REST**
- Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise [IAF PAPER 84-174] p 36 A85-13106
- VO<sub>2</sub> kinetics of constant-load exercise following bed-rest-induced deconditioning p 40 A85-14665
- BIBLIOGRAPHIES**
- Aerospace Medicine and Biology, a continuing bibliography with indexes [NASA-SP-7011(265)] p 44 N85-13467
- Space medicine research publications: 1983-1984 [NASA-CR-3860] p 44 N85-13469
- BIOASTRONAUTICS**
- Cardiovascular system and microgravity simulation and inflight results [IAF PAPER 84-186] p 36 A85-13112
- Assessment of medical risk in space flight [IAF PAPER 84-189] p 28 A85-13114
- Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563
- BIOCHEMICAL OXYGEN DEMAND**
- Results of study of hypoxia problems p 44 N85-13462
- BIOCHEMISTRY**
- Repeats of base oligomers as the primordial coding sequences of the primeval earth and their vestiges in modern genes p 34 A85-15619
- Architecture of dermatophyte cell walls: Electron microscopic and biochemical analysis [NASA-TM-77441] p 35 N85-12546
- BIOCONTROL SYSTEMS**
- The regulation of cerebral circulation --- Russian book p 30 A85-14123
- Optimal control of inspiratory airflow in breathing p 50 A85-15807
- BIOCONVERSION**
- Cultivation and conversion of marine macroalgae --- biomass energy production [DE84-004522] p 35 N85-13464
- BIODYNAMICS**
- X-ray diagnosis of disorders of the rib respiration mechanism p 42 A85-14949
- The cerebellum and the control of rhythmic movements --- Russian book p 34 A85-15819
- BIOELECTRIC POTENTIAL**
- Analysis of frequency variations of neuron discharges in the human brain during the single execution of psychological tests p 46 A85-14599

**BIOELECTRICITY**

- Influence of continuous hypo- and hyperkinesia on EEG-rhythms in the range of 0.5 to 35 Hz in rats p 28 A85-13462
- Effects of CO<sub>2</sub> and bronchoconstriction on costal and crural diaphragm electromyograms p 30 A85-14656

**BIOLOGICAL EFFECTS**

- The distinctive features of the biological action of a low frequency electric field (50 Hz) on animals in various stages of ontogenesis p 33 A85-14940
- Electrical parameters in 60-Hz biological exposure systems and their measurement: A primer [PB84-217793] p 35 N85-12548
- Field/cell interaction model [DE84-011914] p 36 N85-13465
- A survey of space biology and space medicine [ESA-BR-17] p 36 N85-13466
- Aerospace Medicine and Biology, a continuing bibliography with indexes [NASA-SP-7011(265)] p 44 N85-13467

**BIOLOGICAL EVOLUTION**

- Periodicity of extinctions in the geologic past Deterministic versus stochastic explanations p 32 A85-14741
- Nitrogen fixation by a methanogenic archaeobacterium p 34 A85-15432

**BIOLOGICAL MODELS (MATHEMATICS)**

- The stable pathological state and the pathological system p 30 A85-14598
- Mechanisms of orientation selectivity of 'simple' and 'complex' neurons of the visual cortex and a model of the orientation-selective receptive field p 32 A85-14874

- Effect of structural heterogeneity on the quantum yield of photosynthesis p 34 A85-15564
- A mathematical model of visual perception regarding peripheral vision and its application to the Hermann's illusion p 47 N85-13080

**BIOLOGY**

- Achievements in biology outlined p 35 N85-12213

**BIOMASS ENERGY PRODUCTION**

- Cultivation and conversion of marine macroalgae --- biomass energy production [DE84-004522] p 35 N85-13464

**BIOMEDICAL DATA**

- Establishing norms for human performance with allowance for medical and technical support p 42 A85-14948
- USSR report: Life Sciences: Biomedical and behavioral sciences [JPRS-UBB-84-026] p 35 N85-13457

**BIONICS**

- USSR report: Life sciences. Biomedical and behavioral sciences [JPRS-UBB-84-025] p 35 N85-13453

**BIOPHYSICS**

- Biophysical mechanisms in the formation of electroencephalograms --- Russian book p 30 A85-14635

**BIO TECHNOLOGY**

- 'Plasma 01' - Appliance for human blood collection and processing during space flights [IAF PAPER 84-188] p 48 A85-13102
- USSR report: Life sciences. Biomedical and behavioral sciences [JPRS-UBB-84-025] p 35 N85-13453

**BLOOD**

- Variation in blood lipid levels and the prevalence of hyperproteinemia in a group of men aged 40-59 years engaged in strenuous mental activity (A repeated examination) p 41 A85-14934

**BLOOD CIRCULATION**

- Water-salt homeostasis in cases of circulatory insufficiency --- Russian book p 30 A85-14634

**BLOOD COAGULATION**

- The yearly rhythm of several indices of the blood coagulation system and lipid volume in healthy subjects and in patients with ischemic heart disease p 41 A85-14931

**BLOOD PLASMA**

- 'Plasma 01' - Appliance for human blood collection and processing during space flights [IAF PAPER 84-188] p 48 A85-13102
- Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise [IAF PAPER 84-174] p 36 A85-13106
- Hypoxemia increases plasma catecholamine concentrations in exercising humans p 40 A85-14664

**BLOOD VESSELS**

- Aging of smooth-muscle cells of blood vessels p 33 A85-14950

**BLOOD VOLUME**

- Effect of temperature and baroreceptor stimulation on reflex venomotor responses p 39 A85-14658

- Hemopoiesis in dogs during experiments with acute blood loss replaced by PFS emulsion in combination with polyglucine p 32 A85-14746
- The effect of exogenous cholinesterase on the lung surfactant system following massive blood loss p 32 A85-14747

- The possibility of using blood loss resistant rats in the study of the mechanisms for the maintenance of energy metabolism during prolonged sleep hypotension p 32 A85-14748

**BODY COMPOSITION (BIOLOGY)**

- Weight loss and changes in body composition at high altitude p 40 A85-14667

**BODY TEMPERATURE**

- Investigation of intrinsic temperature fields connected with the excitation of the rat cerebral cortex p 28 A85-13458

- Sleep-waking pattern and body temperature in hypoxia at selected ambient temperatures p 32 A85-14666

**BODY WEIGHT**

- Weight loss and changes in body composition at high altitude p 40 A85-14667

**BONE DEMINERALIZATION**

- Influence of immobilization and weightlessness on bone tissue [IAF PAPER 84-177] p 27 A85-13109

**BOUNDARY LAYERS**

- The Eocene/Oligocene boundary event in the deep sea p 34 A85-15597

**BOUNDARY VALUE PROBLEMS**

- Optimal control of inspiratory airflow in breathing p 50 A85-15807

**BRAIN**

- Analysis of frequency variations of neuron discharges in the human brain during the single execution of psychological tests p 46 A85-14599
- Mechanisms of oxygen toxicity and methods of protection [AD-A145830] p 43 N85-12551
- Reflection of lateralization of sound stimuli in evoked potentials of human brain p 44 N85-13463

**BRAIN CIRCULATION**

- Interest of head down tilt to simulate the neurocirculatory modifications observed during space flight [IAF PAPER 84-190] p 37 A85-13115
- Combined effect of nonuniform microwave (2.4 GHz) and gamma radiation on the blood-brain barrier in rats p 29 A85-13800

- The regulation of cerebral circulation --- Russian book p 30 A85-14123

- Effect of hypothermia on metabolic processes in the brain p 33 A85-14875

- Thermoresponses of the brain to sensory stimulation p 33 A85-14912

**BRAIN DAMAGE**

- A new form of artificial stable functional link of the human brain p 39 A85-14597
- The stable pathological state and the pathological system p 30 A85-14598

**BREATHING**

- Optimal control of inspiratory airflow in breathing p 50 A85-15807

**BREATHING APPARATUS**

- Experiments with hydrox at 1.3 MPa (13 atm) --- for divers [FOA-C-58014-H1] p 45 N85-13471

**BRONCHI**

- Deposition in the human lung during respiration of small particles suspended in the air [BLL-RISLEY-TR-5021-(9091.9)] p 42 N85-12549

**BULGARIA**

- Achievements in biology outlined p 35 N85-12213

**BURNS (INJURIES)**

- The effect of antioxidants on changes in lipid content in rat liver following thermal burn p 32 A85-14749

**C**

**CABIN ATMOSPHERES**

- Airliner cabin air quality [S-REPT-98-468] p 50 N85-12560

**CALCIUM**

- Non-invasive techniques for determining musculoskeletal body composition [DE84-015718] p 44 N85-13470

**CALCIUM METABOLISM**

- Influence of immobilization and weightlessness on bone tissue [IAF PAPER 84-177] p 27 A85-13109

- The effect of adrenaline and cAMP on the activity of a thermostable cytoplasmic inhibitor of Ca<sup>2+</sup> / ion transport across the mitochondrial membrane of the rat heart p 33 A85-14911

**CARBOXYLIC ACIDS**

The formation of amino acids and their amides during the deformation of ammonium salts of carboxylic acids under high pressure p 52 A85-15949

**CARDIOGRAPHY**

Mapping of mammalian arrhythmias with the cardiac laser scanner p 35 N85-12545

**CARDIOLOGY**

Occupational aspects of hypertensive disease — Russian book p 37 A85-13592  
Arrhythmias and conduction disturbances of the heart — Russian book p 37 A85-13593  
Acute cardiorespiratory responses of hypertensive rats to swimming and treadmill exercise p 30 A85-14654  
Computer-aided tomography in cardiology. Communication I Methodology p 40 A85-14926  
A computer analysis of ECGs under physical load p 40 A85-14927

**CARDIOVASCULAR SYSTEM**

The influence of lower body negative pressure (LBPN) upon circulating hormones - The effect of angiotensin blockade [IAF PAPER 84-175] p 36 A85-13107  
Cardiovascular system and microgravity simulation and inflight results [IAF PAPER 84-186] p 36 A85-13112  
Cardiocirculatory adjustment during a 7 day microgravity simulation (6 deg head down tilt, HDT) [IAF PAPER 84-187] p 37 A85-13113  
Effects of age on metabolic responses to endurance training in rats p 31 A85-14657  
The functional state of the cardiovascular system in the process of adaptation to the interaction of industrial factors p 41 A85-14939  
Aging of smooth-muscle cells of blood vessels p 33 A85-14950  
Cardiovascular disease among U.S. Navy pilots [AD-A145871] p 43 N85-12552  
Impact of space medicine on Earth-based medicine: Academician Ye. I. Chazov comments on the work in orbit of physician O. Atkov p 44 N85-13458

**CAROTID SINUS BODY**

A morphometric study of the carotid body in chronically hypoxic rats p 31 A85-14659

**CATECHOLAMINE**

Hypoxemia increases plasma catecholamine concentrations in exercising humans p 40 A85-14664  
The effect of adrenaline and cAMP on the activity of a thermostable cytoplasmic inhibitor of  $Ca^{2+}$  / ion transport across the mitochondrial membrane of the rat heart p 33 A85-14911

**CELLS (BIOLOGY)**

Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation p 33 A85-14913  
Aging of smooth-muscle cells of blood vessels p 33 A85-14950  
Architecture of dermatophyte cell Walls: Electron microscopic and biochemical analysis [NASA-TM-77441] p 35 N85-12546  
Field/cell interaction model [DE84-011914] p 36 N85-13465  
**CENTRAL NERVOUS SYSTEM DEPRESSANTS**  
Investigation of intrinsic temperature fields connected with the excitation of the rat cerebral cortex p 28 A85-13458  
**CEREBELLUM**  
The cerebellum and the control of rhythmic movements — Russian book p 34 A85-15819  
**CEREBRAL CORTEX**  
Investigation of intrinsic temperature fields connected with the excitation of the rat cerebral cortex p 28 A85-13458  
The neurons of the visual cortex - Adaptivity and the dynamics of receptive fields — Russian book p 30 A85-14628  
Biophysical mechanisms in the formation of electroencephalograms — Russian book p 30 A85-14635  
Mechanisms of orientation selectivity of 'simple' and 'complex' neurons of the visual cortex and a model of the orientation-selective receptive field p 32 A85-14874  
Thermoresponses of the brain to sensory stimulation p 33 A85-14912  
Visually evoked responses from non-occipital areas of the human cortex [AD-A146079] p 43 N85-12553  
Evidence for multiple areas in the human auditory cortex [AD-A146086] p 43 N85-12555  
Visual selective attention [AD-A146220] p 46 N85-12558

**CEREBROSPINAL FLUID**

Effects of head down tilt (HDT) fluid volume shift on cerebral sensory responses [IAF PAPER 84-191] p 37 A85-13116

**CHEMICAL COMPOSITION**

Nutritional models for space travel from chemically defined diets [NASA-CR-3850] p 50 N85-12561  
Non-invasive techniques for determining musculoskeleton body composition [DE84-015718] p 44 N85-13470

**CHEMICAL EVOLUTION**

Repeats of base oligomers as the primordial coding sequences of the primeval earth and their vestiges in modern genes p 34 A85-15619  
The formation of amino acids and their amides during the deformation of ammonium salts of carboxylic acids under high pressure p 52 A85-15949

**CHLORPROMAZINE**

Increased susceptibility to radiofrequency radiation due to pharmacological agents p 29 A85-13619

**CHOLINESTERASE**

The effect of exogenous cholinesterase on the lung surfactant system following massive blood loss p 32 A85-14747

**CHRONIC CONDITIONS**

A morphometric study of the carotid body in chronically hypoxic rats p 31 A85-14659

**CIRCADIAN RHYTHMS**

Sleep of shiftworkers within the Arctic Circle p 38 A85-13617  
The yearly rhythm of several indices of the blood coagulation system and lipid volume in healthy subjects and in patients with ischemic heart disease p 41 A85-14931  
The performance of the operators of heat and electric power plants working 12-hour day and night shifts p 42 A85-14942

**CLIMATE**

Climate-chamber experiments to improve pilots' work conditions p 50 N85-13454

**CLINICAL MEDICINE**

Sports medicine p 37 A85-13594  
Effect of several factors on the course and exacerbation of ischemic heart disease p 40 A85-14824  
Periodic respiration and disturbances in cardiac activity during sleep in patients with ischemic heart disease p 41 A85-14936  
The pharmacodynamics of a new Beta-blocker Corgard (Nadolol) in patients with stress angina p 41 A85-14938  
Clinical and physiological characteristics of the contact action of high-frequency ultrasound p 42 A85-14943  
Establishing norms for human performance with allowance for medical and technical support p 42 A85-14948

**COGNITION**

Cognitive coordinate systems: Accounts of mental rotation and individual differences in spatial ability [AD-A146149] p 46 N85-12557

**COLD ACCLIMATIZATION**

Related and unrelated changes in response to exercise and cold in rats - A reevaluation p 31 A85-14663

**COMPUTER GRAPHICS**

Computer-aided tomography in cardiology. Communication I Methodology p 40 A85-14926

**COMPUTER TECHNIQUES**

A computer analysis of ECGs under physical load p 40 A85-14927  
An evaluation of central hemodynamics by computerized tetrapolar thoracic rheography p 40 A85-14929

**CONGRESSIONAL REPORTS**

Airliner cabin air quality [S-REPT-98-488] p 50 N85-12560

**CONTOURS**

Mechanisms of orientation selectivity of 'simple' and 'complex' neurons of the visual cortex and a model of the orientation-selective receptive field p 32 A85-14874

**CONTROLLED ATMOSPHERES**

Concept study on the technology of CELSS [IAF PAPER 84-167] p 48 A85-13101

**CONVULSIONS**

Mechanisms of oxygen toxicity and methods of protection [AD-A145830] p 43 N85-12551

**COORDINATES**

Cognitive coordinate systems: Accounts of mental rotation and individual differences in spatial ability [AD-A146149] p 46 N85-12557

**CORONARY ARTERY DISEASE**

The effect of emotional stress on the system of hemostasis in patients with coronary atherosclerosis p 41 A85-14937

**COSMONAUTS**

Some organizational aspects of work in open space of the Salyut-7 station crews p 48 A85-13286

**COST EFFECTIVENESS**

The human role in space. Volume 3: Generalizations on human roles in space [NASA-CR-171225] p 51 N85-13475

**CREW STATIONS**

The human role in space. Volume 3: Generalizations on human roles in space [NASA-CR-171225] p 51 N85-13475

**CREWS**

The human role in space. Volume 2: Research analysis and technology report [NASA-CR-171224] p 51 N85-13474

**CULTIVATION**

Cultivation and conversion of marine macroalgae — biomass energy production [DE84-004522] p 35 N85-13464

**CYTOLOGY**

Possible mechanisms of cell adaptation to hypogravity [IAF PAPER 84-173] p 27 A85-13105

**CYTOPLASM**

The effect of adrenaline and cAMP on the activity of a thermostable cytoplasmic inhibitor of  $Ca^{2+}$  / ion transport across the mitochondrial membrane of the rat heart p 33 A85-14911

**D****DATA BASE MANAGEMENT SYSTEMS**

The human role in space. Volume 3: Generalizations on human roles in space [NASA-CR-171225] p 51 N85-13475

**DATA PROCESSING**

Individual differences in automatic and controlled information processing [AD-A146245] p 46 N85-12559  
Human reliability data bank: Feasibility study [DE84-015215] p 51 N85-13476

**DATA REDUCTION**

Data reduction of body surface potential maps by means of orthogonal expansions p 49 A85-13821  
The human role in space. Volume 2: Research analysis and technology report [NASA-CR-171224] p 51 N85-13474

**DATA RETRIEVAL**

Human reliability data bank: Feasibility study [DE84-015215] p 51 N85-13476

**DATA STORAGE**

Human reliability data bank: Feasibility study [DE84-015215] p 51 N85-13476

**DECOMPRESSION SICKNESS**

Application of the compartmentalization/airlock concept to aircraft and tolerance of lung to rapid decompression p 29 A85-13615  
Isoproterenol infusion promotes nitrogen washout in rats under normobaric conditions p 30 A85-14652

**DIAPHRAGM (ANATOMY)**

Effects of CO<sub>2</sub> and bronchoconstriction on costal and crural diaphragm electromyograms p 30 A85-14656

**DIELECTRIC PROPERTIES**

Determination of bound water in biological tissue and energy dissipated in bound water by low level microwaves [AD-A143101] p 35 N85-12547

**DIETS**

Nutritional models for space travel from chemically defined diets [NASA-CR-3850] p 50 N85-12561

**DIMENHYDRINATE**

Transdermal Therapeutic System Scopolamine (TTSS), dimenhydrinate, and placebo - A comparative study at sea p 38 A85-13622

**DISEASES**

Disease and injury as a result of sports activities (2nd revised and enlarged edition) p 42 A85-15823

**DISPLAY DEVICES**

The effect of redundant cues on retrieval time p 45 A85-12747  
A pilot performance method for validating visual attachments to flight simulators [AIAA PAPER 84-2438] p 49 A85-13532

**DIVING (UNDERWATER)**

Experiments with hydrox at 1.3 MPa (13 atm) — for divers [FOA-C-58014-H1] p 45 N85-13471

**DRUGS**

Canine postradiation histamine levels and subsequent response to Compound 48/80 — mast cell degranulating agent p 29 A85-13620  
Isoproterenol infusion promotes nitrogen washout in rats under normobaric conditions p 30 A85-14652



- The pharmacodynamics of a new Beta-blocker Corgard (Nadolol) in patients with stress angina p 41 A85-14938

## E

## EARTH PLANETARY STRUCTURE

- Microfossils in the petrified columnar stromatolites of the Upper Riphean of the Turukhansk region p 33 A85-14910

## ECHOCARDIOGRAPHY

- Echocardiograms of adolescent athletes p 40 A85-14928

## EDUCATION

- Training and development of engineers at the Air Force Flight Test Center - An overview [AIAA PAPER 84-2528] p 45 A85-13587

## EFFERENT NERVOUS SYSTEMS

- The cerebellum and the control of rhythmic movements --- Russian book p 34 A85-15819

## EJECTION SEATS

- Airplane designer's checklist for occupant injury prevention [AIAA PAPER 84-2520] p 49 A85-13583

## ELECTRIC CORONA

- Electrical parameters in 60-Hz biological exposure systems and their measurement: A primer [PB84-217793] p 35 N85-12548

## ELECTRIC FIELD STRENGTH

- The distinctive features of the biological action of a low frequency electric field (50 Hz) on animals in various stages of ontogenesis p 33 A85-14940  
Features of morphological changes in the adrenal glands of sexually immature white mice under the effect of an industrial-frequency electric field p 33 A85-14944

## ELECTRIC FIELDS

- Investigation of fertility and in utero effects in rats chronically exposed to a high-intensity 60-Hz electric field p 29 A85-13820  
Electrical parameters in 60-Hz biological exposure systems and their measurement: A primer [PB84-217793] p 35 N85-12548  
Human reactions to ELF (Extremely Low Frequency) electric and magnetic fields. An annotated bibliography of current literature, fourth edition [PB84-230358] p 45 N85-13472

## ELECTRIC STIMULI

- Arrhythmias and conduction disturbances of the heart --- Russian book p 37 A85-13593

## ELECTRICAL MEASUREMENT

- Electrical parameters in 60-Hz biological exposure systems and their measurement: A primer [PB84-217793] p 35 N85-12548

## ELECTROCARDIOGRAPHY

- Arrhythmias and conduction disturbances of the heart --- Russian book p 37 A85-13593  
Data reduction of body surface potential maps by means of orthogonal expansions p 49 A85-13821  
A computer analysis of ECGs under physical load p 40 A85-14927

## ELECTROENCEPHALOGRAPHY

- Eye movements during sleep and EEG in zero-gravity [IAF PAPER 84-192] p 37 A85-13117  
The effect of the partial deprivation of slow-wave sleep on the sleep-wakefulness cycle p 28 A85-13300  
Influence of continuous hypo- and hyperkinesia on EEG-rhythms in the range of 0.5 to 35 Hz in rats p 28 A85-13462  
Biophysical mechanisms in the formation of electroencephalograms --- Russian book p 30 A85-14635  
Neurophysiological correlatives for ideomotor stress in athletes p 42 A85-15565  
Evidence for multiple areas in the human auditory cortex [AD-A146086] p 43 N85-12555

## ELECTROMAGNETIC RADIATION

- Field/cell interaction model [DE84-011914] p 36 N85-13465

## ELECTROMYOGRAPHY

- Effects of CO<sub>2</sub> and bronchoconstriction on costal and crural diaphragm electromyograms p 30 A85-14656

## ELECTRON MICROSCOPY

- Architecture of dermatophyte cell Walls: Electron microscopic and biochemical analysis [NASA-TM-77441] p 35 N85-12546

## ELECTROPHYSIOLOGY

- Eye movements during sleep and EEG in zero-gravity [IAF PAPER 84-192] p 37 A85-13117

## EMBRYOLOGY

- General configuration of the Spacelab Mission D1 Frog Statolith Experiment-STATEX [IAF PAPER 84-172] p 27 A85-13104

## EMOTIONAL FACTORS

- The effect of emotional stress on the system of hemostasis in patients with coronary atherosclerosis p 41 A85-14937

## ENERGY LEVELS

- Determination of bound water in biological tissue and energy dissipated in bound water by low level microwaves [AD-A143101] p 35 N85-12547

## ENVIRONMENTAL CONTROL

- Space station life support systems - Status report [IAF PAPER 84-162] p 47 A85-13097  
Life support system for European space station elements [IAF PAPER 84-164] p 48 A85-13098  
Concept study on the technology of CELSS [IAF PAPER 84-167] p 48 A85-13101

## ENVIRONMENTAL ENGINEERING

- Establishing norms for human performance with allowance for medical and technical support p 42 A85-14948

## ENZYME ACTIVITY

- Pulmonary oxygen toxicity in awake dogs - Metabolic and physiological effects p 31 A85-14662  
Seasonal readjustments of lipolytic processes and myocardial function in rabbits under conditions of homodynamic heart overstrain p 33 A85-14932

## EPIDEMIOLOGY

- USSR report: Life sciences. Biomedical and behavioral sciences [JPRS-UBB-84-025] p 35 N85-13453

## EUROPEAN SPACE PROGRAMS

- Life support system for European space station elements [IAF PAPER 84-164] p 48 A85-13098

## EVOKED RESPONSE (PSYCHOPHYSIOLOGY)

- Neurophysiological correlatives for ideomotor stress in athletes p 42 A85-15565  
Visually evoked responses from non-occipital areas of the human cortex [AD-A146079] p 43 N85-12553  
Evidence for multiple areas in the human auditory cortex [AD-A146086] p 43 N85-12555  
Reflection of lateralization of sound stimuli in evoked potentials of human brain p 44 N85-13463

## EXERCISE PHYSIOLOGY

- Sports medicine p 37 A85-13594  
The effect of sleep loss on high intensity exercise and recovery p 38 A85-13618  
Acute cardiorespiratory responses of hypertensive rats to swimming and treadmill exercise p 30 A85-14654  
Effects of age on metabolic responses to endurance training in rats p 31 A85-14657

## EXOBIOLGY

- Possible mechanisms of cell adaptation to hypogravity [IAF PAPER 84-173] p 27 A85-13105  
Assessment of medical risk in space flight [IAF PAPER 84-189] p 28 A85-13114  
Psychological selection of pilots and cosmonauts --- Russian book p 45 A85-13749  
Investigation of claims for interstellar organisms and complex organic molecules p 51 A85-14523  
Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563  
A survey of space biology and space medicine [ESA-BR-17] p 36 N85-13466  
Aerospace Medicine and Biology, a continuing bibliography with indexes [NASA-SP-7011(265)] p 44 N85-13467

## EXPERIMENTATION

- Water-salt homeostasis in cases of circulatory insufficiency --- Russian book p 30 A85-14634

## EXTINCTION

- Periodicity of extinctions in the geologic past  
Deterministic versus stochastic explanations p 32 A85-14741

## EXTRATERRESTRIAL LIFE

- Investigation of claims for interstellar organisms and complex organic molecules p 51 A85-14523

## EXTRAVEHICULAR ACTIVITY

- Space Shuttle maneuvering unit design and operational activity - Solar max repair mission [IAF PAPER 84-160] p 47 A85-13095  
Space suits - Ten periods of extravehicular activity from the Salyut-7 space station p 48 A85-13284  
Some organizational aspects of work in open space of the Salyut-7 station crews p 48 A85-13286  
The human role in space. Volume 1: Executive summary [NASA-CR-171223] p 51 N85-13473

## EYE (ANATOMY)

- The linear homeomorphic saccadic eye movement model - A modification p 49 A85-13822

## EYE MOVEMENTS

- Eye movements during sleep and EEG in zero-gravity [IAF PAPER 84-192] p 37 A85-13117  
Origin of eye movements induced by high frequency rotation of the head p 29 A85-13621

## F

## FABRICS

- The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946

## FEMALES

- Provision of female workers in hothouses with vitamins C, B1 and B2 p 42 A85-14945

## FERTILITY

- Investigation of fertility and in utero effects in rats chronically exposed to a high-intensity 60-Hz electric field p 29 A85-13820

## FIBRILLATION

- Mapping of mammalian arrhythmias with the cardiac laser scanner p 35 N85-12545

## FLIGHT SAFETY

- Personality factors in aviation p 46 A85-15173

## FLIGHT SIMULATORS

- A pilot performance method for validating visual attachments to flight simulators [AIAA PAPER 84-2438] p 49 A85-13532

## FLIGHT TESTS

- Training and development of engineers at the Air Force Flight Test Center - An overview [AIAA PAPER 84-2528] p 45 A85-13587

## FOSSILS

- The Eocene/Oligocene boundary event in the deep sea p 34 A85-15597

## FUNGI

- Architecture of dermatophyte cell Walls: Electron microscopic and biochemical analysis [NASA-TM-77441] p 35 N85-12546

## G

## GAS MIXTURES

- Experiments with hydrox at 1.3 MPa (13 atm) --- for divers [FOA-C-58014-H1] p 45 N85-13471

## GAS TRANSPORT

- VO<sub>2</sub> kinetics of constant-load exercise following bed-rest-induced deconditioning p 40 A85-14665

## GENETIC CODE

- Repeats of base oligomers as the primordial coding sequences of the primeval earth and their vestiges in modern genes p 34 A85-15619

## GENETICS

- USSR report: Life sciences. Biomedical and behavioral sciences [JPRS-UBB-84-025] p 35 N85-13453

## GLYCERIDES

- Causes of the triglyceride-lowering effect of exercise training in rats p 31 A85-14660

## GRAVITATIONAL EFFECTS

- General configuration of the Spacelab Mission D1 Frog Statolith Experiment-STATEX [IAF PAPER 84-172] p 27 A85-13104

## GRAVITATIONAL PHYSIOLOGY

- Possible mechanisms of cell adaptation to hypogravity [IAF PAPER 84-173] p 27 A85-13105  
Influence of immobilization and weightlessness on bone tissue [IAF PAPER 84-177] p 27 A85-13109  
Cardiovascular system and microgravity simulation and inflight results [IAF PAPER 84-186] p 36 A85-13112  
Effects of head down tilt (HDT) fluid volume shift on cerebral sensory responses [IAF PAPER 84-191] p 37 A85-13116  
Physiological investigations in weightlessness p 38 A85-13597  
A survey of space biology and space medicine [ESA-BR-17] p 36 N85-13466

## GROWTH

- A morphometric study of the carotid body in chronically hypoxic rats p 31 A85-14659

## H

## HEAD MOVEMENT

- Effects of head down tilt (HDT) fluid volume shift on cerebral sensory responses [IAF PAPER 84-191] p 37 A85-13116  
Origin of eye movements induced by high frequency rotation of the head p 29 A85-13621

## HEALTH

- Differences in health risks by aircraft model among US Navy pilots  
[AD-A146147] p 44 N85-12556

## HEALTH PHYSICS

- Hygienic significance of noise entropy  
p 49 A85-14941

## HEART

- Data reduction of body surface potential maps by means of orthogonal expansions  
p 49 A85-13821

## HEART DISEASES

- Arrhythmias and conduction disturbances of the heart  
— Russian book p 37 A85-13593  
Effect of several factors on the course and exacerbation of ischemic heart disease p 40 A85-14824  
The yearly rhythm of several indices of the blood coagulation system and lipid volume in healthy subjects and in patients with ischemic heart disease  
p 41 A85-14931  
Cardiovascular disease among U.S. Navy pilots  
[AD-A145871] p 43 N85-12552

## HEART FUNCTION

- Isoproterenol infusion promotes nitrogen washout in rats under normobaric conditions p 30 A85-14652  
Seasonal readjustments of lipolytic processes and myocardial function in rabbits under conditions of homodynamic heart overstrain p 33 A85-14932  
Periodic respiration and disturbances in cardiac activity during sleep in patients with ischemic heart disease  
p 41 A85-14936  
Mapping of mammalian arrhythmias with the cardiac laser scanner p 35 N85-12545

## HEART RATE

- Cardiocirculatory adjustment during a 7 day microgravity simulation (6 deg head down tilt, HDT)  
[IAF PAPER 84-187] p 37 A85-13113  
Variability of heart rhythm under information-processing loads p 39 A85-14600  
Hypoxemia increases plasma catecholamine concentrations in exercising humans p 40 A85-14664

## HEAT ACCLIMATIZATION

- Circulation among healthy residents of the arid zone of Turkmenia. II - Rationed exercise in subjects with good and inadequate adaptation to high environmental temperatures p 41 A85-14933

## HELICOPTER CONTROL

- Pilot differences and motion cuing effects on simulated helicopter hover p 47 A85-12746

## HELICOPTERS

- The effects of helicopter vibration on the spinal system  
[AD-A146274] p 50 N85-12562

## HEMATOPOIESIS

- Hemopoiesis in dogs during experiments with acute blood loss replaced by PFS emulsion in combination with polyglucose p 32 A85-14746

## HEMODYNAMIC RESPONSES

- Cardiovascular system and microgravity simulation and inflight results  
[IAF PAPER 84-186] p 36 A85-13112  
Cardiocirculatory adjustment during a 7 day microgravity simulation (6 deg head down tilt, HDT)  
[IAF PAPER 84-187] p 37 A85-13113  
Interest of head down tilt to simulate the neurocirculatory modifications observed during space flight  
[IAF PAPER 84-190] p 37 A85-13115  
Effect of temperature and baroreceptor stimulation on reflex venomotor responses p 39 A85-14658  
Short-term active orthostatic test in combination with blood deposition in the lower extremities  
p 40 A85-14822

- Seasonal readjustments of lipolytic processes and myocardial function in rabbits under conditions of homodynamic heart overstrain p 33 A85-14932

- Circulation among healthy residents of the arid zone of Turkmenia. II - Rationed exercise in subjects with good and inadequate adaptation to high environmental temperatures p 41 A85-14933

- Tolerance for physical load and some characteristics of hemodynamic support in healthy subjects as a function of hemodynamic type p 41 A85-14935

## HEMODYNAMICS

- An evaluation of central hemodynamics by computerized tetrapolar thoracic rheography p 40 A85-14929

## HEMORRHAGES

- Hemopoiesis in dogs during experiments with acute blood loss replaced by PFS emulsion in combination with polyglucose p 32 A85-14746  
The effect of exogenous cholinesterase on the lung surfactant system following massive blood loss  
p 32 A85-14747  
The possibility of using blood loss resistant rats in the study of the mechanisms for the maintenance of energy metabolism during prolonged sleep hypotension  
p 32 A85-14748

## HEMOSTATICS

- The effect of emotional stress on the system of hemostasis in patients with coronary atherosclerosis  
p 41 A85-14937

## HIBERNATION

- Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation  
p 33 A85-14913

## HIGH ALTITUDE BREATHING

- The effect of altitude on normal pulmonary function tests  
- A comparison between the Dead Sea area and Amman p 38 A85-13614  
Results of study of hypoxia problems  
p 44 A85-13462

## HIGH ALTITUDE ENVIRONMENTS

- Hypoxic man - Lessons from extreme altitude (1984 Armstrong Lecture) p 39 A85-13623  
Weight loss and changes in body composition at high altitude p 40 A85-14667

## HIGH GRAVITY ENVIRONMENTS

- The unresponsiveness of the immune system of the rat to hypergravity p 28 A85-13613  
The immune system - Effects of hypergravity and hypogravity p 29 A85-13624

## HIGH TEMPERATURE ENVIRONMENTS

- Provision of female workers in hothouses with vitamins C, B1 and B2 p 42 A85-14945

## HISTAMINES

- Canine postirradiation histamine levels and subsequent response to Compound 48/80 — mast cell degranulating agent p 29 A85-13620

## HISTOCHEMICAL ANALYSIS

- Muscle fiber type composition and G-tolerance  
p 38 A85-13612

## HOMEOSTASIS

- Water-salt homeostasis in cases of circulatory insufficiency — Russian book p 30 A85-14634

## HORMONE METABOLISMS

- Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise  
[IAF PAPER 84-174] p 36 A85-13106  
The influence of lower body negative pressure (LBNP) upon circulating hormones - The effect of angiotensin blockade  
[IAF PAPER 84-175] p 36 A85-13107  
Influence of physical training on insulin responses to glucose loads during bedrest (HDT 6 deg)  
[IAF PAPER 84-176] p 36 A85-13108

## HORMONES

- Modulation of the cytosolic androgen receptor in striated muscle by sex steroids  
[NASA-CR-174173] p 44 A85-13468

## HOVERING STABILITY

- Pilot differences and motion cuing effects on simulated helicopter hover p 47 A85-12746

## HUMAN BEHAVIOR

- USSR report: Life Sciences: Biomedical and behavioral sciences  
[JPRS-UBB-84-026] p 35 N85-13457  
Reflection of lateralization of sound stimuli in evoked potentials of human brain p 44 A85-13463  
The human role in space. Volume 2: Research analysis and technology report  
[NASA-CR-171224] p 51 N85-13474  
The human role in space. Volume 3: Generalizations on human roles in space  
[NASA-CR-171225] p 51 N85-13475

## HUMAN BODY

- Data reduction of body surface potential maps by means of orthogonal expansions p 49 A85-13821  
Non-invasive techniques for determining musculoskeleton body composition  
[DE84-015718] p 44 A85-13470

## HUMAN FACTORS ENGINEERING

- A quantitative evaluation of human activity in man-machine systems — Russian book  
p 49 A85-13599  
Establishing norms for human performance with allowance for medical and technical support  
p 42 A85-14948

- The human operator and system effectiveness  
[AD-A146326] p 50 N85-12563

- Climate-chamber experiments to improve pilots' work conditions p 50 N85-13454

- Impact of space medicine on Earth-based medicine: Academician Ye. I. Chazov comments on the work in orbit of physician O. Atkov p 44 A85-13458

- The human role in space. Volume 2: Research analysis and technology report  
[NASA-CR-171224] p 51 N85-13474

- The human role in space. Volume 3: Generalizations on human roles in space  
[NASA-CR-171225] p 51 N85-13475

## HUMAN PATHOLOGY

- A new form of artificial stable functional link of the human brain p 39 A85-14597  
The stable pathological state and the pathological system p 30 A85-14598  
Water-salt homeostasis in cases of circulatory insufficiency — Russian book p 30 A85-14634  
Disease and injury as a result of sports activities (2nd revised and enlarged edition) p 42 A85-15823

## HUMAN PERFORMANCE

- The cerebellum and the control of rhythmic movements — Russian book p 34 A85-15819  
The role of physical and physiological capacities and their modification on the tolerance to various stress experienced by Air Force personnel  
p 43 N85-12550  
[AD-A145779]  
Experiments with hydrox at 1.3 MPa (13 atm) — for divers  
[FOA-C-58014-H1] p 45 N85-13471  
Human reliability data bank: Feasibility study  
[DE84-015215] p 51 N85-13476

## HUMAN REACTIONS

- Job attitudes of Air Force Navigators  
p 45 A85-13443  
A quantitative evaluation of human activity in man-machine systems — Russian book  
p 49 A85-13599  
Problem of controlling the functional condition in humans p 39 A85-14596  
Analysis of frequency variations of neuron discharges in the human brain during the single execution of psychological tests p 46 A85-14599  
Human reactions to ELF (Extremely Low Frequency) electric and magnetic fields. An annotated bibliography of current literature, fourth edition  
[PB84-230358] p 45 N85-13472

## HUMAN TOLERANCES

- The effect of sleep loss on high intensity exercise and recovery p 38 A85-13618  
Tolerance to dynamic and static physical stress in hypertensive patients p 41 A85-14930  
Tolerance for physical load and some characteristics of hemodynamic support in healthy subjects as a function of hemodynamic type p 41 A85-14935  
Impact of space medicine on Earth-based medicine: Academician Ye. I. Chazov comments on the work in orbit of physician O. Atkov p 44 A85-13458

## HUMIDITY MEASUREMENT

- Climate-chamber experiments to improve pilots' work conditions p 50 N85-13454

## HYDROPONICS

- A hydroponic method for plant growth in microgravity  
[IAF PAPER 84-ST-05] p 28 A85-13292

## HYOSCINE

- Transdermal Therapeutic System Scopolamine (TTSS), dimenhydrinate, and placebo - A comparative study at sea p 38 A85-13622

## HYPERCAPNIA

- Effects of CO<sub>2</sub> and bronchoconstriction on costal and crural diaphragm electromyograms p 30 A85-14656

## HYPERKINESIA

- Influence of continuous hypo- and hyperkinesia on EEG-rhythms in the range of 0.5 to 35 Hz in rats  
p 28 A85-13462

## HYPEROXIA

- Pulmonary oxygen toxicity in awake dogs - Metabolic and physiological effects p 31 A85-14662  
Mechanisms of oxygen toxicity and methods of protection  
[AD-A145830] p 43 N85-12551

## HYPERTENSION

- Occupational aspects of hypertensive disease — Russian book p 37 A85-13592  
Acute cardiorespiratory responses of hypertensive rats to swimming and treadmill exercise p 30 A85-14654  
Tolerance to dynamic and static physical stress in hypertensive patients p 41 A85-14930

## HYPERTHERMIA

- Circulation among healthy residents of the arid zone of Turkmenia. II - Rationed exercise in subjects with good and inadequate adaptation to high environmental temperatures p 41 A85-14933

## HYPOKINESIA

- Influence of continuous hypo- and hyperkinesia on EEG-rhythms in the range of 0.5 to 35 Hz in rats  
p 28 A85-13462

- Atrophy and growth failure of rat hindlimb muscles in tail-cast suspension p 31 A85-14661  
Changes of the viscoelastic properties of muscles in seamen during voyages p 40 A85-14823

## HYPOTENSION

- The possibility of using blood loss resistant rats in the study of the mechanisms for the maintenance of energy metabolism during prolonged sleep hypotension  
p 32 A85-14748

## HYPOTHALAMUS

Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation p 33 A85-14913

## HYPOTHERMIA

Related and unrelated changes in response to exercise and cold in rats - A reevaluation p 31 A85-14663  
Sleep-waking pattern and body temperature in hypoxia at selected ambient temperatures p 32 A85-14666  
Effect of hypothermia on metabolic processes in the brain p 33 A85-14875

## HYPOVOLEMIA

Hemopoiesis in dogs during experiments with acute blood loss replaced by PFS emulsion in combination with polyglucose p 32 A85-14746  
The effect of exogenous cholinesterase on the lung surfactant system following massive blood loss p 32 A85-14747  
The possibility of using blood loss resistant rats in the study of the mechanisms for the maintenance of energy metabolism during prolonged sleep hypotension p 32 A85-14748

## HYPOXEMIA

Decrease in functional residual capacity during sleep in normal humans p 39 A85-14653  
Hypoxemia increases plasma catecholamine concentrations in exercising humans p 40 A85-14664

## HYPOXIA

Hypoxic man - Lessons from extreme altitude (1984 Armstrong Lecture) p 39 A85-13623  
A morphometric study of the carotid body in chronically hypoxic rats p 31 A85-14659  
Sleep-waking pattern and body temperature in hypoxia at selected ambient temperatures p 32 A85-14666  
USSR report: Life Sciences: Biomedical and behavioral sciences [JPSP-UBB-84-026] p 35 N85-13457  
Results of study of hypoxia problems p 44 N85-13462

## ILLUSIONS

A mathematical model of visual perception regarding peripheral vision and its application to the Hermann's illusion p 47 N85-13080

## IMMOBILIZATION

Influence of immobilization and weightlessness on bone tissue [IAF PAPER 84-177] p 27 A85-13109

## IMMUNITY

The immune system - Effects of hypergravity and hypogravity p 29 A85-13624

## IMMUNOLOGY

The unresponsiveness of the immune system of the rat to hypergravity p 28 A85-13613

## IMPLANTED ELECTRODES (BIOLOGY)

A new form of artificial stable functional link of the human brain p 39 A85-14597

## INDUSTRIAL AREAS

The functional state of the cardiovascular system in the process of adaptation to the interaction of industrial factors p 41 A85-14939

## INDUSTRIAL SAFETY

A hygienic assessment of occupational noise and vibration - Russian book p 49 A85-14425  
Hygienic significance of noise entropy p 49 A85-14941

Features of morphological changes in the adrenal glands of sexually immature white mice under the effect of an industrial-frequency electric field p 33 A85-14944  
The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946

## INFECTIOUS DISEASES

Effect of several factors on the course and exacerbation of ischemic heart disease p 40 A85-14824

## INFORMATION MANAGEMENT

Variability of heart rhythm under information-processing loads p 39 A85-14600  
The effect of noise on the processing of information in connection with some aspects of neurodynamics p 46 A85-14947

## INFORMATION RETRIEVAL

The effect of redundant cues on retrieval time p 45 A85-12747

## INFORMATION SYSTEMS

Human reliability data bank: Feasibility study [DE84-015215] p 51 N85-13476

## INFRARED RADIATION

The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946

## INJURIES

Disease and injury as a result of sports activities (2nd revised and enlarged edition) p 42 A85-15823

## INSULIN

Influence of physical training on insulin responses to glucose loads during bedrest (HDT 6 deg) [IAF PAPER 84-176] p 36 A85-13108

## INTERSTELLAR MATTER

Investigation of claims for interstellar organisms and complex organic molecules p 51 A85-14523

## INTRAVEHICULAR ACTIVITY

The human role in space. Volume 1: Executive summary [NASA-CR-171223] p 51 N85-13473

## ION MOTION

The effect of adrenaline and cAMP on the activity of a thermostable cytoplasmic inhibitor of Ca<sup>2+</sup>/ion transport across the mitochondrial membrane of the rat heart p 33 A85-14911

## ISCHEMIA

Effect of several factors on the course and exacerbation of ischemic heart disease p 40 A85-14824  
The yearly rhythm of several indices of the blood coagulation system and lipid volume in healthy subjects and in patients with ischemic heart disease p 41 A85-14931  
Periodic respiration and disturbances in cardiac activity during sleep in patients with ischemic heart disease p 41 A85-14936  
The effect of the antioxidant dibunol on the composition and intensity of peroxidation of blood lipids in patients with ischemic heart disease p 42 A85-15950

## LANDING AIDS

Visual slant misperception and the 'black-hole' landing situation p 45 A85-13616

## LASER APPLICATIONS

Mapping of mammalian arrhythmias with the cardiac laser scanner p 35 N85-12545

## LATERAL CONTROL

Reflection of lateralization of sound stimuli in evoked potentials of human brain p 44 N85-13463

## LIFE SCIENCES

Life Sciences Research Facilities for a space station [IAF PAPER 84-161] p 47 A85-13096  
The first dedicated life sciences Spacelab mission [IAF PAPER 84-170] p 27 A85-13103  
Spacelab 1 and the Life Sciences Flight Experiments Program [IAF PAPER 84-183] p 28 A85-13111

## LIFE SUPPORT SYSTEMS

Space station life support systems - Status report [IAF PAPER 84-162] p 47 A85-13097  
Life support system for European space station elements [IAF PAPER 84-164] p 48 A85-13098  
The development status of candidate life support technology for a space station [IAF PAPER 84-165] p 48 A85-13099  
Concept study on the technology of CELSS [IAF PAPER 84-167] p 48 A85-13101

## LIGHT (VISIBLE RADIATION)

The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946

## LIPID METABOLISM

Causes of the triglyceride-lowering effect of exercise training in rats p 31 A85-14660  
Weight loss and changes in body composition at high altitude p 40 A85-14667  
The effect of antioxidants on changes in lipid content in rat liver following thermal burn p 32 A85-14749  
Effect of hypothermia on metabolic processes in the brain p 33 A85-14875  
The yearly rhythm of several indices of the blood coagulation system and lipid volume in healthy subjects and in patients with ischemic heart disease p 41 A85-14931  
Seasonal readjustments of lipolytic processes and myocardial function in rabbits under conditions of homodynamic heart overstrain p 33 A85-14932  
Variation in blood lipid levels and the prevalence of hyperproteinemia in a group of men aged 40-59 years engaged in strenuous mental activity (A repeated examination) p 41 A85-14934  
The effect of the antioxidant dibunol on the composition and intensity of peroxidation of blood lipids in patients with ischemic heart disease p 42 A85-15950

## LIVER

The effect of antioxidants on changes in lipid content in rat liver following thermal burn p 32 A85-14749

## LONG DURATION SPACE FLIGHT

Assessment of medical risk in space flight [IAF PAPER 84-189] p 28 A85-13114  
Nutritional models for space travel from chemically defined diets [NASA-CR-3850] p 50 N85-12561

## LOW ALTITUDE

The effect of altitude on normal pulmonary function tests - A comparison between the Dead Sea area and Amman p 38 A85-13614

## LOWER BODY NEGATIVE PRESSURE

The influence of lower body negative pressure (LBNP) upon circulating hormones - The effect of angiotensin blockade [IAF PAPER 84-175] p 36 A85-13107  
Effect of temperature and baroreceptor stimulation on reflex venomotor responses p 39 A85-14658  
LUNG MORPHOLOGY  
Pulmonary oxygen toxicity in awake dogs - Metabolic and physiological effects p 31 A85-14662  
The effect of exogenous cholinesterase on the lung surfactant system following massive blood loss p 32 A85-14747

## LYSOZYME

The effect of antioxidants on changes in lipid content in rat liver following thermal burn p 32 A85-14749

## M

## MAGNETIC FIELDS

Electrical parameters in 60-Hz biological exposure systems and their measurement: A primer [PB84-217793] p 35 N85-12548  
Human reactions to ELF (Extremely Low Frequency) electric and magnetic fields. An annotated bibliography of current literature, fourth edition [PB84-230359] p 45 N85-13472

## MAN MACHINE SYSTEMS

A quantitative evaluation of human activity in man-machine systems - Russian book p 49 A85-13599

Rech-1 speech synthesizer for man-machine dialog p 51 N85-13456

The human role in space. Volume 1: Executive summary [NASA-CR-171223] p 51 N85-13473

## MARINE RESOURCES

Cultivation and conversion of marine macroalgae - biomass energy production [DE84-004522] p 35 N85-13464

## MATHEMATICAL MODELS

The linear homeomorphic saccadic eye movement model - A modification p 49 A85-13822

## MEDICAL EQUIPMENT

'Plasma 01' - Appliance for human blood collection and processing during space flights [IAF PAPER 84-168] p 48 A85-13102

## MEMBRANES

Field/cell interaction model [DE84-011914] p 36 N85-13465

## MENTAL PERFORMANCE

Variability of heart rhythm under information-processing loads p 39 A85-14600

Variation in blood lipid levels and the prevalence of hyperproteinemia in a group of men aged 40-59 years engaged in strenuous mental activity (A repeated examination) p 41 A85-14934

The effect of noise on the processing of information in connection with some aspects of neurodynamics p 46 A85-14947

Cognitive coordinate systems: Accounts of mental rotation and individual differences in spatial ability [AD-A146149] p 46 N85-12557

## METABOLISM

Effects of age on metabolic responses to endurance training in rats p 31 A85-14657

The possibility of using blood loss resistant rats in the study of the mechanisms for the maintenance of energy metabolism during prolonged sleep hypotension p 32 A85-14748

## METHANE

Nitrogen fixation by a methanogenic archaeobacterium p 34 A85-15432  
Dinitrogen fixation by a thermophilic methanogenic bacterium p 34 A85-15433

## MICROGRAVITY APPLICATIONS

A hydroponic method for plant growth in microgravity [IAF PAPER 84-ST-05] p 28 A85-13292

## MICROORGANISMS

Investigation of claims for interstellar organisms and complex organic molecules p 51 A85-14523  
Microfossils in the petrified columnar stromatolites of the Upper Riphean of the Turukhansk region p 33 A85-14910

**MICROWAVES**

- Determination of bound water in biological tissue and energy dissipated in bound water by low level microwaves  
[AD-A143101] p 35 N85-12547

**MILITARY PSYCHOLOGY**

- Job attitudes of Air Force Navigators p 45 A85-13443

**MINERAL METABOLISM**

- Water-salt homeostasis in cases of circulatory insufficiency — Russian book p 30 A85-14634

**MISSION PLANNING**

- The first dedicated life sciences Spacelab mission [IAF PAPER 84-170] p 27 A85-13103  
The human role in space. Volume 1: Executive summary [NASA-CR-171223] p 51 N85-13473

**MITOCHONDRIA**

- The effect of adrenaline and cAMP on the activity of a thermostable cytoplasmic inhibitor of Ca<sup>2+</sup> / ion transport across the mitochondrial membrane of the rat heart p 33 A85-14911

**MORPHOLOGY**

- Problem of controlling the functional condition in humans p 39 A85-14596  
A morphometric study of the carotid body in chronically hypoxic rats p 31 A85-14659  
Features of morphological changes in the adrenal glands of sexually immature white mice under the effect of an industrial-frequency electric field p 33 A85-14944

**MOTION**

- The perception of three-dimensional structure from rigid and nonrigid motion p 46 A85-13909

**MOTION PERCEPTION**

- The cerebellum and the control of rhythmic movements — Russian book p 34 A85-15819

**MOTION SICKNESS DRUGS**

- Transdermal Therapeutic System Scopolamine (TTSS), dimenhydrinate, and placebo - A comparative study at sea p 38 A85-13622

**MOTION SIMULATORS**

- Pilot differences and motion cuing effects on simulated helicopter hover p 47 A85-12746

**MUSCLES**

- Modulation of the cytosolic androgen receptor in striated muscle by sex steroids [NASA-CR-174173] p 44 N85-13468

**MUSCULAR FATIGUE**

- The effects of helicopter vibration on the spinal system [AD-A146274] p 50 N85-12562

**MUSCULAR FUNCTION**

- The linear homeomorphic saccadic eye movement model - A modification p 49 A85-13822  
Atrophy and growth failure of rat hindlimb muscles in tail-cast suspension p 31 A85-14661  
Clinical and physiological characteristics of the contact action of high-frequency ultrasound p 42 A85-14943  
Aging of smooth-muscle cells of blood vessels p 33 A85-14950

**MUSCULAR STRENGTH**

- Muscle fiber type composition and G-tolerance p 38 A85-13612

**MUSCULAR TONUS**

- Changes of the viscoelastic properties of muscles in seamen during voyages p 40 A85-14823

**MUSCULOSKELETAL SYSTEM**

- Non-invasive techniques for determining musculoskeleton body composition [DE84-015718] p 44 N85-13470

**N****NAVIGATORS**

- Job attitudes of Air Force Navigators p 45 A85-13443

**NEUROLOGY**

- The regulation of cerebral circulation — Russian book p 30 A85-14123

**NEURONS**

- Analysis of frequency variations of neuron discharges in the human brain during the single execution of psychological tests p 46 A85-14599  
The neurons of the visual cortex - Adaptivity and the dynamics of receptive fields — Russian book p 30 A85-14628  
Mechanisms of orientation selectivity of 'simple' and 'complex' neurons of the visual cortex and a model of the orientation-selective receptive field p 32 A85-14874  
Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation p 33 A85-14913

**NEUROPHYSIOLOGY**

- The effect of the partial deprivation of slow-wave sleep on the sleep-wakefulness cycle p 28 A85-13300  
Investigation of intrinsic temperature fields connected with the excitation of the rat cerebral cortex p 28 A85-13458  
Problem of controlling the functional condition in humans p 39 A85-14596  
A new form of artificial stable functional link of the human brain p 39 A85-14597  
The stable pathological state and the pathological system p 30 A85-14598  
Analysis of frequency variations of neuron discharges in the human brain during the single execution of psychological tests p 46 A85-14599  
The neurons of the visual cortex - Adaptivity and the dynamics of receptive fields — Russian book p 30 A85-14628  
The effect of noise on the processing of information in connection with some aspects of neurodynamics p 46 A85-14947  
Neurophysiological correlates for ideomotor stress in athletes p 42 A85-15565

**NIGHT FLIGHTS (AIRCRAFT)**

- Visual slant misperception and the 'black-hole' landing situation p 45 A85-13616

**NITROGEN METABOLISM**

- Isoproterenol infusion promotes nitrogen washout in rats under normobaric conditions p 30 A85-14652  
Effect of hyperthermia on metabolic processes in the brain p 33 A85-14875

**NITROGENATION**

- Nitrogen fixation by a methanogenic archaeobacterium p 34 A85-15432  
Dinitrogen fixation by a thermophilic methanogenic bacterium p 34 A85-15433

**NOISE INTENSITY**

- A hygienic assessment of occupational noise and vibration — Russian book p 49 A85-14425  
Hygienic significance of noise entropy p 49 A85-14941  
The effect of noise on the processing of information in connection with some aspects of neurodynamics p 46 A85-14947

**NOISE POLLUTION**

- A hygienic assessment of occupational noise and vibration — Russian book p 49 A85-14425  
Hygienic significance of noise entropy p 49 A85-14941

**NUTRITION**

- Nutritional models for space travel from chemically defined diets [NASA-CR-3850] p 50 N85-12561

**NUTRITIONAL REQUIREMENTS**

- Provision of female workers in hothouses with vitamins C, B1 and B2 p 42 A85-14945

**O****OCCUPATION**

- Job attitudes of Air Force Navigators p 45 A85-13443  
Occupational aspects of hypertensive disease — Russian book p 37 A85-13592

**OCEAN BOTTOM**

- The Eocene/Oligocene boundary event in the deep sea p 34 A85-15597

**ONTOGENY**

- The distinctive features of the biological action of a low frequency electric field (50 Hz) on animals in various stages of ontogenesis p 33 A85-14940

**OPERATOR PERFORMANCE**

- The functional state of the cardiovascular system in the process of adaptation to the interaction of industrial factors p 41 A85-14939  
The performance of the operators of heat and electric power plants working 12-hour day and night shifts p 42 A85-14942  
The human operator and system effectiveness [AD-A146326] p 50 N85-12563

**OPTICAL SCANNERS**

- Mapping of mammalian arrhythmias with the cardiac laser scanner p 35 N85-12545

**OPTIMAL CONTROL**

- Optimal control of inspiratory airflow in breathing p 50 A85-15807

**ORBITAL MANEUVERING VEHICLES**

- Space Shuttle maneuvering unit design and operational activity - Solar max repair mission [IAF PAPER 84-160] p 47 A85-13095

**ORGANIC COMPOUNDS**

- Investigation of claims for interstellar organisms and complex organic molecules p 51 A85-14523

**ORGANIC PEROXIDES**

- The effect of the antioxidant dibutyl on the composition and intensity of peroxidation of blood lipids in patients with ischemic heart disease p 42 A85-15950

**ORTHOSTATIC TOLERANCE**

- The influence of lower body negative pressure (LBNP) upon circulating hormones - The effect of angiotensin blockade [IAF PAPER 84-175] p 36 A85-13107  
Cardiocirculatory adjustment during a 7 day microgravity simulation (6 deg head down tilt, HDT) [IAF PAPER 84-187] p 37 A85-13113  
Interest of head down tilt to simulate the neurocirculatory modifications observed during space flight [IAF PAPER 84-190] p 37 A85-13115  
Short-term active orthostatic test in combination with blood deposition in the lower extremities p 40 A85-14822

**OSTEOPOROSIS**

- Influence of immobilization and weightlessness on bone tissue [IAF PAPER 84-177] p 27 A85-13109

**OXYGEN CONSUMPTION**

- Hypoxemia increases plasma catecholamine concentrations in exercising humans p 40 A85-14664  
VO<sub>2</sub> kinetics of constant-load exercise following bed-rest-induced deconditioning p 40 A85-14665

**OXYGEN METABOLISM**

- Pulmonary oxygen toxicity in awake dogs - Metabolic and physiological effects p 31 A85-14662

**P****PALEONTOLOGY**

- Periodicity of extinctions in the geologic past  
Deterministic versus stochastic explanations p 32 A85-14741  
Microfossils in the petrified columnar stromatolites of the Upper Riphean of the Turukhansk region p 33 A85-14910  
The Eocene/Oligocene boundary event in the deep sea p 34 A85-15597

**PERFORMANCE PREDICTION**

- Individual differences in automatic and controlled information processing [AD-A146245] p 46 N85-12559

**PERIPHERAL CIRCULATION**

- Effect of temperature and baroreceptor stimulation on reflex venomotor responses p 39 A85-14658

**PERIPHERAL VISION**

- A mathematical model of visual perception regarding peripheral vision and its application to the Hermann's illusion p 47 N85-13080

**PERSONALITY**

- Personality factors in aviation p 46 A85-15173

**PERSONNEL**

- The role of physical and physiological capacities and their modification on the tolerance to various stress experienced by Air Force personnel [AD-A145779] p 43 N85-12550  
Cardiovascular disease among U.S. Navy pilots [AD-A145871] p 43 N85-12552  
The human role in space. Volume 2: Research analysis and technology report [NASA-CR-171224] p 51 N85-13474

**PHOTORECEPTORS**

- The neurons of the visual cortex - Adaptivity and the dynamics of receptive fields — Russian book p 30 A85-14628

**PHOTOSYNTHESIS**

- Effect of structural heterogeneity on the quantum yield of photosynthesis p 34 A85-15564

**PHYSICAL EXERCISE**

- Influence of physical training on insulin responses to glucose loads during bedrest (HDT 6 deg) [IAF PAPER 84-176] p 36 A85-13108  
Physical training and +Gz tolerance p 38 A85-13611  
Lack of effect of exercise of platelet activation and platelet reactivity p 39 A85-14655  
Causes of the triglyceride-lowering effect of exercise training in rats p 31 A85-14660  
Related and unrelated changes in response to exercise and cold in rats - A reevaluation p 31 A85-14663  
Hypoxemia increases plasma catecholamine concentrations in exercising humans p 40 A85-14664  
VO<sub>2</sub> kinetics of constant-load exercise following bed-rest-induced deconditioning p 40 A85-14665  
Tolerance for physical load and some characteristics of hemodynamic support in healthy subjects as a function of hemodynamic type p 41 A85-14935
- PHYSICAL SCIENCES**  
Effect of physical work and sleep loss on recovery sleep [AD-A146082] p 43 N85-12554

## PHYSIOCHEMISTRY

- Problem of controlling the functional condition in humans p 39 A85-14596  
 Related and unrelated changes in response to exercise and cold in rats - A reevaluation p 31 A85-14663  
 Nitrogen fixation by a methanogenic archaeobacterium p 34 A85-15432  
 Dinitrogen fixation by a thermophilic methanogenic bacterium p 34 A85-15433

## PHYSIOLOGICAL EFFECTS

- The effect of altitude on normal pulmonary function tests - A comparison between the Dead Sea area and Amman p 38 A85-13614  
 Increased susceptibility to radiofrequency radiation due to pharmacological agents p 29 A85-13619  
 The immune system - Effects of hypergravity and hypogravity p 29 A85-13624  
 Combined effect of nonuniform microwave (2.4 GHz) and gamma radiation on the blood-brain barrier in rats p 29 A85-13800  
 A hygienic assessment of occupational noise and vibration - Russian book p 49 A85-14425  
 Lack of effect of exercise of platelet activation and platelet reactivity p 39 A85-14655  
 Effects of CO<sub>2</sub> and bronchoconstriction on costal and crural diaphragm electromyograms p 30 A85-14656  
 A morphometric study of the carotid body in chronically hypoxic rats p 31 A85-14659  
 Causes of the triglyceride-lowering effect of exercise training in rats p 31 A85-14660  
 Atrophy and growth failure of rat hindlimb muscles in tail-cast suspension p 31 A85-14661  
 Pulmonary oxygen toxicity in awake dogs - Metabolic and physiological effects p 31 A85-14662  
 VO<sub>2</sub> kinetics of constant-load exercise following bed-rest-induced deconditioning p 40 A85-14665  
 Sleep-waking pattern and body temperature in hypoxia at selected ambient temperatures p 32 A85-14666  
 The effect of antioxidants on changes in lipid content in rat liver following thermal burn p 32 A85-14749  
 Effect of hypothermia on metabolic processes in the brain p 33 A85-14875  
 The effect of emotional stress on the system of hemostasis in patients with coronary atherosclerosis p 41 A85-14937  
 Hygienic significance of noise entropy p 49 A85-14941  
 Clinical and physiological characteristics of the contact action of high-frequency ultrasound p 42 A85-14943  
 The effect of noise on the processing of information in connection with some aspects of neurodynamics p 46 A85-14947  
 The effect of the antioxidant dibutyl on the composition and intensity of peroxidation of blood lipids in patients with ischemic heart disease p 42 A85-15950  
 Mechanisms of oxygen toxicity and methods of protection [AD-A145830] p 43 A85-12551  
 The effects of helicopter vibration on the spinal system [AD-A146274] p 50 A85-12562  
 A survey of space biology and space medicine [ESA-BR-17] p 36 A85-13466

## PHYSIOLOGICAL FACTORS

- Experiments with hydrox at 1.3 MPa (13 atm) - for divers [FOA-C-58014-H1] p 45 A85-13471  
 The first dedicated life sciences Spacelab mission [IAF PAPER 84-170] p 27 A85-13103  
 Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise [IAF PAPER 84-174] p 36 A85-13106  
 The influence of lower body negative pressure (LBPN) upon circulating hormones - The effect of angiotensin blockade [IAF PAPER 84-175] p 36 A85-13107  
 Influence of physical training on insulin responses to glucose loads during bedrest (HDT 6 deg) [IAF PAPER 84-176] p 36 A85-13108  
 Effects of head down tilt (HDT) fluid volume shift on cerebral sensory responses [IAF PAPER 84-191] p 37 A85-13116  
 Physiological investigations in weightlessness p 38 A85-13597  
 The unresponsiveness of the immune system of the rat to hypergravity p 28 A85-13613  
 The effect of sleep loss on high intensity exercise and recovery p 38 A85-13618  
 Canine postirradiation histamine levels and subsequent response to Compound 48/80 - mast cell degranulating agent p 29 A85-13620  
 Hypoxic man - Lessons from extreme altitude (1984 Armstrong Lecture) p 39 A85-13623

## PHYSIOLOGICAL RESPONSES

- Acute cardiorespiratory responses of hypertensive rats to swimming and treadmill exercise p 30 A85-14654  
 Effects of age on metabolic responses to endurance training in rats p 31 A85-14657  
 Related and unrelated changes in response to exercise and cold in rats - A reevaluation p 31 A85-14663  
 Weight loss and changes in body composition at high altitude p 40 A85-14667  
 Tolerance for physical load and some characteristics of hemodynamic support in healthy subjects as a function of hemodynamic type p 41 A85-14935  
 The functional state of the cardiovascular system in the process of adaptation to the interaction of industrial factors p 41 A85-14939  
 The performance of the operators of heat and electric power plants working 12-hour day and night shifts p 42 A85-14942  
 Features of morphological changes in the adrenal glands of sexually immature white mice under the effect of an industrial-frequency electric field p 33 A85-14944  
 Visually evoked responses from non-occipital areas of the human cortex [AD-A146079] p 43 A85-12553  
 Evidence for multiple areas in the human auditory cortex [AD-A146086] p 43 A85-12555

## PHYSIOLOGICAL TESTS

- The effect of altitude on normal pulmonary function tests - A comparison between the Dead Sea area and Amman p 38 A85-13614  
 Short-term active orthostatic test in combination with blood deposition in the lower extremities p 40 A85-14822

## PILOT PERFORMANCE

- Pilot differences and motion cuing effects on simulated helicopter hover p 47 A85-12746  
 The effect of redundant cues on retrieval time p 45 A85-12747  
 A pilot performance method for validating visual attachments to flight simulators [AIAA PAPER 84-2438] p 49 A85-13532  
 Physical training and +Gz tolerance p 38 A85-13611  
 Muscle fiber type composition and G-tolerance p 38 A85-13612  
 Stress and accidents in aviation p 46 A85-15172  
 Personality factors in aviation p 46 A85-15173

## PILOT SELECTION

- Psychological selection of pilots and cosmonauts - Russian book p 45 A85-13749

## PILOTS (PERSONNEL)

- Cardiovascular disease among U.S. Navy pilots [AD-A145871] p 43 A85-12552  
 Differences in health risks by aircraft model among US Navy pilots [AD-A148147] p 44 A85-12556

## PLANT STRESS

- Possible mechanisms of cell adaptation to hypogravity [IAF PAPER 84-173] p 27 A85-13105

## PLANTS (BOTANY)

- A hydroponic method for plant growth in microgravity [IAF PAPER 84-ST-05] p 28 A85-13292

## PLATELETS

- Lack of effect of exercise of platelet activation and platelet reactivity p 39 A85-14655

## POLYPEPTIDES

- Repeats of base oligomers as the primordial coding sequences of the primeval earth and their vestiges in modern genes p 34 A85-15619

## PRESSURE EFFECTS

- Effect of temperature and baroreceptor stimulation on reflex venomotor responses p 39 A85-14658

## PRESSURIZED CABINS

- Application of the compartmentalization/airlock concept to aircraft and tolerance of lung to rapid decompression p 29 A85-13615

## PROBLEM SOLVING

- Cognitive coordinate systems: Accounts of mental rotation and individual differences in spatial ability [AD-A148149] p 46 A85-12557

## PROTECTIVE CLOTHING

- The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946

## PROTEIN METABOLISM

- Atrophy and growth failure of rat hindlimb muscles in tail-cast suspension p 31 A85-14661  
 Effect of hypothermia on metabolic processes in the brain p 33 A85-14875

## PROTEINS

- Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation p 33 A85-14913

## PSYCHOLOGICAL EFFECTS

- The effect of noise on the processing of information in connection with some aspects of neurodynamics p 46 A85-14947

## PSYCHOLOGICAL FACTORS

- Psychological selection of pilots and cosmonauts - Russian book p 45 A85-13749

## PSYCHOLOGICAL TESTS

- Analysis of frequency variations of neuron discharges in the human brain during the single execution of psychological tests p 46 A85-14599

## PSYCHOMOTOR PERFORMANCE

- Neurophysiological correlates for ideomotor stress in athletes p 42 A85-15565

## PSYCHOPHYSIOLOGY

- Problem of controlling the functional condition in humans p 39 A85-14596  
 Variability of heart rhythm under information-processing loads p 39 A85-14600

## PULMONARY FUNCTIONS

- The effect of altitude on normal pulmonary function tests - A comparison between the Dead Sea area and Amman p 38 A85-13614  
 Application of the compartmentalization/airlock concept to aircraft and tolerance of lung to rapid decompression p 29 A85-13615  
 Hypoxic man - Lessons from extreme altitude (1984 Armstrong Lecture) p 39 A85-13623

## PULMONARY LESIONS

- Deposition in the human lung during respiration of small particles suspended in the air [BLL-RISLEY-TR-5021-(9091.9)] p 42 A85-12549

## Q

## QUALITATIVE ANALYSIS

- A quantitative evaluation of human activity in man-machine systems - Russian book p 49 A85-13599

## QUANTUM EFFICIENCY

- Effect of structural heterogeneity on the quantum yield of photosynthesis p 34 A85-15564

## R

## RADIATION EFFECTS

- Increased susceptibility to radiofrequency radiation due to pharmacological agents p 29 A85-13619  
 Canine postirradiation histamine levels and subsequent response to Compound 48/80 - mast cell degranulating agent p 29 A85-13620  
 Combined effect of nonuniform microwave (2.4 GHz) and gamma radiation on the blood-brain barrier in rats p 29 A85-13800  
 Investigation of fertility and in utero effects in rats chronically exposed to a high-intensity 60-Hz electric field p 29 A85-13820  
 Determination of bound water in biological tissue and energy dissipated in bound water by low level microwaves [AD-A143101] p 35 A85-12547

## RADIATION PROTECTION

- The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946

## RADIO FREQUENCY HEATING

- Increased susceptibility to radiofrequency radiation due to pharmacological agents p 29 A85-13619

## RADIOBIOLOGY

- Canine postirradiation histamine levels and subsequent response to Compound 48/80 - mast cell degranulating agent p 29 A85-13620  
 Combined effect of nonuniform microwave (2.4 GHz) and gamma radiation on the blood-brain barrier in rats p 29 A85-13800

## RADIOCARDIOGRAPHY

- An evaluation of central hemodynamics by computerized tetrapolar thoracic rheography p 40 A85-14929

## REACTION TIME

- The effect of redundant cues on retrieval time p 45 A85-12747

## REFLEXES

- Problem of controlling the functional condition in humans p 39 A85-14596  
 Effect of temperature and baroreceptor stimulation on reflex venomotor responses p 39 A85-14658

## REGULATIONS

- Airline cabin air quality [S-REPT-98-468] p 50 A85-12560

## RELIABILITY

- Human reliability data bank: Feasibility study [DE84-015215] p 51 A85-13476

## REMOTE CONTROL

The human role in space. Volume 3: Generalizations on human roles in space  
[NASA-CR-171225] p 51 N85-13475

## REPRODUCTION (BIOLOGY)

Investigation of fertility and in utero effects in rats chronically exposed to a high-intensity 60-Hz electric field p 29 A85-13820

## RESEARCH FACILITIES

Life Sciences Research Facilities for a space station [IAF PAPER 84-161] p 47 A85-13096

## RESEARCH VEHICLES

Machine Mechanics Institute builds walking vehicle p 51 N85-13455

## RESPIRATORY PHYSIOLOGY

The effect of sleep loss on high intensity exercise and recovery p 38 A85-13618  
Isoproterenol infusion promotes nitrogen washout in rats under normobaric conditions p 30 A85-14652  
Decrease in functional residual capacity during sleep in normal humans p 39 A85-14653  
Acute cardiorespiratory responses of hypertensive rats to swimming and treadmill exercise p 30 A85-14654  
Effects of CO<sub>2</sub> and bronchoconstriction on costal and crural diaphragm electromyograms p 30 A85-14656  
Periodic respiration and disturbances in cardiac activity during sleep in patients with ischemic heart disease p 41 A85-14936  
X-ray diagnosis of disorders of the rib respiration mechanism p 42 A85-14949

## RESPIRATORY SYSTEM

Optimal control of inspiratory airflow in breathing p 50 A85-15807  
Deposition in the human lung during respiration of small particles suspended in the air [BLL-RISLEY-TR-5021-(9091.9)] p 42 N85-12549

## RHEOLOGY

An evaluation of central hemodynamics by computerized tetrapolar thoracic rheography p 40 A85-14929

## RHYTHM (BIOLOGY)

Influence of continuous hypo- and hyperkinesia on EEG-rhythms in the range of 0.5 to 35 Hz in rats p 28 A85-13462  
The cerebellum and the control of rhythmic movements --- Russian book p 34 A85-15819

## RIBONUCLEIC ACIDS

Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation p 33 A85-14913

## RISK

Differences in health risks by aircraft model among US Navy pilots [AD-A146147] p 44 N85-12556

## ROBOTICS

Machine Mechanics Institute builds walking vehicle p 51 N85-13455

## ROTATION

Origin of eye movements induced by high frequency rotation of the head p 29 A85-13621

## S

## SACCADEIC EYE MOVEMENTS

The linear homeomorphic saccadic eye movement model - A modification p 49 A85-13822

## SALYUT SPACE STATION

Cardiovascular system and microgravity simulation and inflight results [IAF PAPER 84-186] p 36 A85-13112  
Space suits - Ten periods of extravehicular activity from the Salyut-7 space station p 48 A85-13284  
Some organizational aspects of work in open space of the Salyut-7 station crews p 48 A85-13286

## SAMPLERS

'Plasma 01' - Appliance for human blood collection and processing during space flights [IAF PAPER 84-168] p 48 A85-13102

## SENSORY DISCRIMINATION

Reflection of laterization of sound stimuli in evoked potentials of human brain p 44 N85-13463

## SENSORY PERCEPTION

Effects of head down tilt (HDT) fluid volume shift on cerebral sensory responses [IAF PAPER 84-181] p 37 A85-13116  
Reflection of laterization of sound stimuli in evoked potentials of human brain p 44 N85-13463

## SENSORY STIMULATION

Thermoresponses of the brain to sensory stimulation p 33 A85-14912  
USSR report: Life Sciences: Biomedical and behavioral sciences [JPRS-UBB-84-026] p 35 N85-13457

## SHOCK (PHYSIOLOGY)

The possibility of using blood loss resistant rats in the study of the mechanisms for the maintenance of energy metabolism during prolonged sleep hypotension p 32 A85-14748

## SIGNAL ANALYSIS

A computer analysis of ECGs under physical load p 40 A85-14927

## SIGNS AND SYMPTOMS

The regulation of cerebral circulation --- Russian book p 30 A85-14123

## SKIN (ANATOMY)

Transdermal Therapeutic System Scopolamine (TTSS), dimenhydrinate, and placebo - A comparative study at sea p 38 A85-13622

## SLEEP

Eye movements during sleep and EEG in zero-gravity [IAF PAPER 84-192] p 37 A85-13117  
Sleep of shiftworkers within the Arctic Circle p 38 A85-13617  
Decrease in functional residual capacity during sleep in normal humans p 39 A85-14653  
Sleep-waking pattern and body temperature in hypoxia at selected ambient temperatures p 32 A85-14666  
Periodic respiration and disturbances in cardiac activity during sleep in patients with ischemic heart disease p 41 A85-14936  
Effect of physical work and sleep loss on recovery sleep [AD-A146082] p 43 N85-12554  
SLEEP DEPRIVATION  
The effect of the partial deprivation of slow-wave sleep on the sleep-wakefulness cycle p 28 A85-13300  
The effect of sleep loss on high intensity exercise and recovery p 38 A85-13618

## SLOPES

Visual slant misperception and the 'black-hole' landing situation p 45 A85-13616

## SOLAR MAXIMUM MISSION

Space Shuttle maneuvering unit design and operational activity - Solar max repair mission [IAF PAPER 84-160] p 47 A85-13095

## SOUND PROPAGATION

USSR report: Life Sciences: Biomedical and behavioral sciences [JPRS-UBB-84-026] p 35 N85-13457

## SPACE FLIGHT

The human role in space. Volume 1: Executive summary [NASA-CR-171223] p 51 N85-13473

## SPACE FLIGHT STRESS

Physiological investigations in weightlessness p 38 A85-13597

## SPACE PERCEPTION

The perception of three-dimensional structure from rigid and nonrigid motion p 46 A85-13909  
Cognitive coordinate systems: Accounts of mental rotation and individual differences in spatial ability [AD-A146149] p 46 N85-12557

## SPACE SHUTTLE MISSION 41-B

Space Shuttle maneuvering unit design and operational activity - Solar max repair mission [IAF PAPER 84-160] p 47 A85-13095

## SPACE SHUTTLE PAYLOADS

Space Shuttle maneuvering unit design and operational activity - Solar max repair mission [IAF PAPER 84-160] p 47 A85-13095

## SPACE STATIONS

Life Sciences Research Facilities for a space station [IAF PAPER 84-161] p 47 A85-13096  
Space station life support systems - Status report [IAF PAPER 84-162] p 47 A85-13097  
Life support system for European space station elements [IAF PAPER 84-164] p 48 A85-13098  
The development status of candidate life support technology for a space station [IAF PAPER 84-165] p 48 A85-13099

## SPACE SUITS

Space suits - Ten periods of extravehicular activity from the Salyut-7 space station p 48 A85-13284

## SPACEBORNE EXPERIMENTS

General configuration of the Spacelab Mission D1 Frog Statolith Experiment-STATEX [IAF PAPER 84-172] p 27 A85-13104  
Spacelab 1 and the Life Sciences Flight Experiments Program [IAF PAPER 84-183] p 28 A85-13111  
A hydroponic method for plant growth in microgravity [IAF PAPER 84-ST-05] p 28 A85-13292

## SPACECRAFT DESIGN

Space Shuttle maneuvering unit design and operational activity - Solar max repair mission [IAF PAPER 84-160] p 47 A85-13095

## SPACECRAFT ENVIRONMENTS

Concept study on the technology of CELSS [IAF PAPER 84-167] p 48 A85-13101

## SPACELAB

General configuration of the Spacelab Mission D1 Frog Statolith Experiment-STATEX [IAF PAPER 84-172] p 27 A85-13104

## SPACELAB PAYLOADS

The first dedicated life sciences Spacelab mission [IAF PAPER 84-170] p 27 A85-13103  
Spacelab 1 and the Life Sciences Flight Experiments Program [IAF PAPER 84-183] p 28 A85-13111

## SPEECH

Rech-1 speech synthesizer for man-machine dialog p 51 N85-13456

## SPEECH RECOGNITION

Rech-1 speech synthesizer for man-machine dialog p 51 N85-13456

## STEROIDS

Modulation of the cytosolic androgen receptor in striated muscle by sex steroids [NASA-CR-174173] p 44 N85-13468

## STIMULATION

Investigation of intrinsic temperature fields connected with the excitation of the rat cerebral cortex p 28 A85-13458

## STOCHASTIC PROCESSES

Periodicity of extinctions in the geologic past  
Deterministic versus stochastic explanations p 32 A85-14741

## STRESS (PHYSIOLOGY)

The effect of sleep loss on high intensity exercise and recovery p 38 A85-13618  
Effects of age on metabolic responses to endurance training in rats p 31 A85-14657  
Effect of several factors on the course and exacerbation of ischemic heart disease p 40 A85-14824  
A computer analysis of ECGs under physical load p 40 A85-14927  
Tolerance to dynamic and static physical stress in hypertensive patients p 41 A85-14930  
Seasonal readjustments of lipolytic processes and myocardial function in rabbits under conditions of homodynamic heart overstrain p 33 A85-14932  
Circulation among healthy residents of the arid zone of Turkmenia. II - Rationed exercise in subjects with good and inadequate adaptation to high environmental temperatures p 41 A85-14933  
Tolerance for physical load and some characteristics of hemodynamic support in healthy subjects as a function of hemodynamic type p 41 A85-14935  
The pharmacodynamics of a new Beta-blocker Corgard (Nadolol) in patients with stress angina p 41 A85-14938  
The functional state of the cardiovascular system in the process of adaptation to the interaction of industrial factors p 41 A85-14939  
The role of physical and physiological capacities and their modification on the tolerance to various stress experienced by Air Force personnel [AD-A145779] p 43 N85-12550

## STRESS (PSYCHOLOGY)

Variability of heart rhythm under information-processing loads p 39 A85-14600  
Effect of several factors on the course and exacerbation of ischemic heart disease p 40 A85-14824  
Variation in blood lipid levels and the prevalence of hyperproteinemia in a group of men aged 40-59 years engaged in strenuous mental activity (A repeated examination) p 41 A85-14934  
The effect of emotional stress on the system of hemostasis in patients with coronary atherosclerosis p 41 A85-14937  
The functional state of the cardiovascular system in the process of adaptation to the interaction of industrial factors p 41 A85-14939  
Stress and accidents in aviation p 46 A85-15172  
Neurophysiological correlates for ideomotor stress in athletes p 42 A85-15565  
The role of physical and physiological capacities and their modification on the tolerance to various stress experienced by Air Force personnel [AD-A145779] p 43 N85-12550

## STRUCTURAL DESIGN CRITERIA

Airplane designer's checklist for occupant injury prevention [AIAA PAPER 84-2520] p 49 A85-13583  
STRUCTURAL PROPERTIES (GEOLOGY)  
The Eocene/Oligocene boundary event in the deep sea p 34 A85-15597

## SUPPORT SYSTEMS

The human role in space. Volume 2: Research analysis and technology report [NASA-CR-171224] p 51 N85-13474

## SURFACE PROPERTIES

Data reduction of body surface potential maps by means of orthogonal expansions p 49 A85-13821

## SYNTHESIS (CHEMISTRY)

The formation of amino acids and their amides during the deformation of ammonium salts of carboxylic acids under high pressure p 52 A85-15949

## SYNTHESIZERS

Rech-1 speech synthesizer for man-machine dialog p 51 N85-13456

## SYSTEMS ANALYSIS

The human operator and system effectiveness [AD-A146326] p 50 N85-12563

## SYSTEMS ENGINEERING

The development status of candidate life support technology for a space station [IAF PAPER 84-165] p 48 A85-13099

## T

## TECHNOLOGY ASSESSMENT

Space station life support systems - Status report [IAF PAPER 84-162] p 47 A85-13097

The development status of candidate life support technology for a space station [IAF PAPER 84-165] p 48 A85-13099

## TEMPERATURE EFFECTS

Effect of temperature and baroreceptor stimulation on reflex venomotor responses p 39 A85-14658

## TEMPERATURE MEASUREMENT

Climate-chamber experiments to improve pilots' work conditions p 50 N85-13454

## THERMOGRAPHY

Investigation of intrinsic temperature fields connected with the excitation of the rat cerebral cortex p 28 A85-13458

## THERMORECEPTORS

Thermoresponses of the brain to sensory stimulation p 33 A85-14912

## TISSUES (BIOLOGY)

Determination of bound water in biological tissue and energy dissipated in bound water by low level microwaves [AD-A143101] p 35 N85-12547

## TOLERANCES (PHYSIOLOGY)

The possibility of using blood loss resistant rats in the study of the mechanisms for the maintenance of energy metabolism during prolonged sleep hypotension p 32 A85-14748

## TOMOGRAPHY

Computer-aided tomography in cardiology. Communication I Methodology p 40 A85-14926

## TOXINS AND ANTITOXINS

Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563

## TRAINING ANALYSIS

Training and development of engineers at the Air Force Flight Test Center - An overview [AIAA PAPER 84-2528] p 45 A85-13587

## TRAINING EVALUATION

Individual differences in automatic and controlled information processing [AD-A146245] p 46 N85-12559

## TRANSMISSION LINES

Electrical parameters in 60-Hz biological exposure systems and their measurement: A primer [PB84-217793] p 35 N85-12548

## U

## U.S.S.R. SPACE PROGRAM

Space suits - Ten periods of extravehicular activity from the Salyut-7 space station p 48 A85-13284

## ULTRASONIC RADIATION

Clinical and physiological characteristics of the contact action of high-frequency ultrasound p 42 A85-14943

## V

## VAPOR DEPOSITION

Deposition in the human lung during respiration of small particles suspended in the air [BLL-RISLEY-TR-5021-(9091.9)] p 42 N85-12549

## VERTEBRAL COLUMN

The effects of helicopter vibration on the spinal system [AD-A146274] p 50 N85-12562

## VERY LOW FREQUENCIES

Human reactions to ELF (Extremely Low Frequency) electric and magnetic fields. An annotated bibliography of current literature, fourth edition [PB84-230358] p 45 N85-13472

## VESTIBULAR NYSTAGMUS

Effects of head down tilt (HDT) fluid volume shift on cerebral sensory responses [IAF PAPER 84-191] p 37 A85-13116

## VIBRATION EFFECTS

Origin of eye movements induced by high frequency rotation of the head p 29 A85-13621

A hygienic assessment of occupational noise and vibration - Russian book p 49 A85-14425

The effects of helicopter vibration on the spinal system [AD-A146274] p 50 N85-12562

## VISCOELASTICITY

Changes of the viscoelastic properties of muscles in seamen during voyages p 40 A85-14823

## VISION

Visually evoked responses from non-occipital areas of the human cortex [AD-A146079] p 43 N85-12553

Visual selective attention [AD-A146220] p 46 N85-12558

## VISUAL PERCEPTION

Visual slant misperception and the 'black-hole' landing situation p 45 A85-13616

The neurons of the visual cortex - Adaptivity and the dynamics of receptive fields - Russian book p 30 A85-14628

Mechanisms of orientation selectivity of 'simple' and 'complex' neurons of the visual cortex and a model of the orientation-selective receptive field p 32 A85-14874

A mathematical model of visual perception regarding peripheral vision and its application to the Hermann's illusion p 47 N85-13080

## VISUAL STIMULI

The effect of redundant cues on retrieval time p 45 A85-12747

## VISUAL TASKS

A pilot performance method for validating visual attachments to flight simulators [AIAA PAPER 84-2438] p 49 A85-13532

## VITAMINS

Provision of female workers in hothouses with vitamins C, B1 and B2 p 42 A85-14945

## VOICE COMMUNICATION

Rech-1 speech synthesizer for man-machine dialog p 51 N85-13456

## W

## WAKEFULNESS

The effect of the partial deprivation of slow-wave sleep on the sleep-wakefulness cycle p 28 A85-13300

Pulmonary oxygen toxicity in awake dogs - Metabolic and physiological effects p 31 A85-14662

Sleep-waking pattern and body temperature in hypoxia at selected ambient temperatures p 32 A85-14666

## WALKING MACHINES

Machine Mechanics Institute builds walking vehicle p 51 N85-13455

## WALLS

Architecture of dermatophyte cell Walls: Electron microscopic and biochemical analysis [NASA-TM-77441] p 35 N85-12546

## WATER

Determination of bound water in biological tissue and energy dissipated in bound water by low level microwaves [AD-A143101] p 35 N85-12547

## WATER BALANCE

Water-salt homeostasis in cases of circulatory insufficiency - Russian book p 30 A85-14634

## WEIGHTLESSNESS

'Plasma 01' - Appliance for human blood collection and processing during space flights [IAF PAPER 84-168] p 48 A85-13102

The first dedicated life sciences Spacelab mission [IAF PAPER 84-170] p 27 A85-13103

General configuration of the Spacelab Mission D1 Frog Statolith Experiment-STATEX [IAF PAPER 84-172] p 27 A85-13104

Possible mechanisms of cell adaptation to hypogravity [IAF PAPER 84-173] p 27 A85-13105

Influence of immobilization and weightlessness on bone tissue [IAF PAPER 84-177] p 27 A85-13109

Eye movements during sleep and EEG in zero-gravity [IAF PAPER 84-192] p 37 A85-13117

Physiological investigations in weightlessness p 38 A85-13597

The immune system - Effects of hypergravity and hypogravity p 29 A85-13624

A survey of space biology and space medicine [ESA-BR-17] p 36 N85-13466

## WEIGHTLESSNESS SIMULATION

Influence of physical training on insulin responses to glucose loads during bedrest (HDT 6 deg) [IAF PAPER 84-176] p 36 A85-13108

Cardiovascular system and microgravity simulation and inflight results [IAF PAPER 84-186] p 36 A85-13112

Cardiocirculatory adjustment during a 7 day microgravity simulation (6 deg head down tilt, HDT) [IAF PAPER 84-187] p 37 A85-13113

Interest of head down tilt to simulate the neurocirculatory modifications observed during space flight [IAF PAPER 84-190] p 37 A85-13115

## WINGS

Deposition in the human lung during respiration of small particles suspended in the air [BLL-RISLEY-TR-5021-(9091.9)] p 42 N85-12549

## WORK CAPACITY

The performance of the operators of heat and electric power plants working 12-hour day and night shifts p 42 A85-14942

Clinical and physiological characteristics of the contact action of high-frequency ultrasound p 42 A85-14943

Provision of female workers in hothouses with vitamins C, B1 and B2 p 42 A85-14945

Establishing norms for human performance with allowance for medical and technical support p 42 A85-14948

## WORK-REST CYCLE

The effect of the partial deprivation of slow-wave sleep on the sleep-wakefulness cycle p 28 A85-13300

Sleep of shiftworkers within the Arctic Circle p 38 A85-13617

## WORKLOADS (PSYCHOPHYSIOLOGY)

Variability of heart rhythm under information-processing loads p 39 A85-14600

Tolerance to dynamic and static physical stress in hypertensive patients p 41 A85-14930

Tolerance for physical load and some characteristics of hemodynamic support in healthy subjects as a function of hemodynamic type p 41 A85-14935

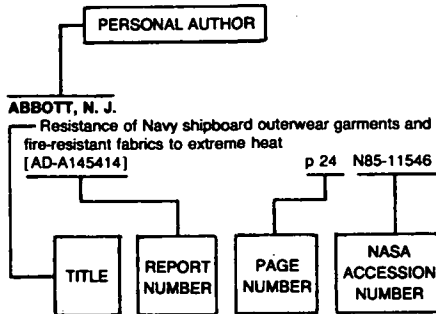
## X

## X RAY ANALYSIS

X-ray diagnosis of disorders of the rib respiration mechanism p 42 A85-14949



## Typical Personal Author Index Listing



Listings in this index are arranged alphabetically by personal author. The title of the document provides the user with a brief description of the subject matter. The report number helps to indicate the type of document listed (e.g., NASA report, translation, NASA contractor report). The page and accession numbers are located beneath and to the right of the title. Under any one author's name the accession numbers are arranged in sequence with the AIAA accession numbers appearing first.

## A

- ABDULLAEV, R. A.**  
Effect of hypothermia on metabolic processes in the brain p 33 A85-14875
- ABRAMOV, I. P.**  
Space suits - Ten periods of extravehicular activity from the Salyut-7 space station p 48 A85-13284
- ACKERMAN, P. L.**  
Individual differences in automatic and controlled information processing [AD-A146245] p 46 N85-12559
- ADAMS, W. C.**  
The role of physical and physiological capacities and their modification on the tolerance to various stress experienced by Air Force personnel [AD-A145779] p 43 N85-12550
- AFONIN, N. I.**  
Hemopoiesis in dogs during experiments with acute blood loss replaced by PFS emulsion in combination with polyglucose p 32 A85-14746
- AKHSIANOV, U. U.**  
Hemopoiesis in dogs during experiments with acute blood loss replaced by PFS emulsion in combination with polyglucose p 32 A85-14746
- ALEXANDRE, C.**  
Influence of immobilization and weightlessness on bone tissue [IAF PAPER 84-177] p 27 A85-13109
- AMOSOV, I. S.**  
X-ray diagnosis of disorders of the rib respiration mechanism p 42 A85-14949
- ANDERSON, H.**  
Sleep of shiftworkers within the Arctic Circle p 38 A85-13617
- ANNAT, G.**  
Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise [IAF PAPER 84-174] p 36 A85-13106
- ANTSIFEROVA, N. G.**  
Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563

- ARBEILLE, P.**  
Cardiovascular system and microgravity simulation and inflight results [IAF PAPER 84-186] p 36 A85-13112
- ARESHIDZE, T. KH.**  
A computer analysis of ECGs under physical load p 40 A85-14927
- ARKHIPOV, S. N.**  
An evaluation of central hemodynamics by computerized tetrapolar thoracic rheography p 40 A85-14929
- ARKHIPOVA, G. V.**  
The effect of antioxidants on changes in lipid content in rat liver following thermal burn p 32 A85-14749
- ARKHIPOVA, G. V.**  
The effect of the antioxidant dibunol on the composition and intensity of peroxidation of blood lipids in patients with ischemic heart disease p 42 A85-15950
- ARONSON, M.**  
A pilot performance method for validating visual attachments to flight simulators [AIAA PAPER 84-2438] p 49 A85-13532
- ARSHAVSKII, I. I.**  
The cerebellum and the control of rhythmic movements p 34 A85-15819
- ASLANIAN, N. L.**  
The yearly rhythm of several indices of the blood coagulation system and lipid volume in healthy subjects and in patients with ischemic heart disease p 41 A85-14931
- ASSUR, M. V.**  
The possibility of using blood loss resistant rats in the study of the mechanisms for the maintenance of energy metabolism during prolonged sleep hypotension p 32 A85-14748
- AUBRY, M.-P.**  
The Eocene/Oligocene boundary event in the deep sea p 34 A85-15597
- AUST, G.**  
Effects of head down tilt (HDT) fluid volume shift on cerebral sensory responses [IAF PAPER 84-191] p 37 A85-13116
- B**
- BABAEV, A. B.**  
Circulation among healthy residents of the arid zone of Turkmenia. II - Rationed exercise in subjects with good and inadequate adaptation to high environmental temperatures p 41 A85-14933
- BAGASHVILI, L. P.**  
X-ray diagnosis of disorders of the rib respiration mechanism p 42 A85-14949
- BAGROV, I. A. I.**  
Water-salt homeostasis in cases of circulatory insufficiency p 30 A85-14634
- BAISCH, F.**  
Influence of physical training on insulin responses to glucose loads during bedrest (HDT 6 deg) [IAF PAPER 84-176] p 36 A85-13108
- BAISCH, F.**  
Cardiocirculatory adjustment during a 7 day microgravity simulation (6 deg head down tilt, HDT) [IAF PAPER 84-187] p 37 A85-13113
- BAISCH, F.**  
Effects of head down tilt (HDT) fluid volume shift on cerebral sensory responses [IAF PAPER 84-191] p 37 A85-13116
- BALLDIN, U. I.**  
Physical training and +Gz tolerance p 38 A85-13611
- BALLDIN, U. I.**  
Muscle fiber type composition and G-tolerance p 38 A85-13612
- BALUDA, M. V.**  
The effect of emotional stress on the system of hemostasis in patients with coronary atherosclerosis p 41 A85-14937
- BARER, A. S.**  
Space suits - Ten periods of extravehicular activity from the Salyut-7 space station p 48 A85-13284
- BARONE, R. P.**  
The immune system - Effects of hypergravity and hypogravity p 29 A85-13624

- BARSEL, V. A.**  
The effect of the antioxidant dibunol on the composition and intensity of peroxidation of blood lipids in patients with ischemic heart disease p 42 A85-15950
- BAZAREVICH, G. IA.**  
The effect of exogenous cholinesterase on the lung surfactant system following massive blood loss p 32 A85-14747
- BECK, L.**  
Cardiocirculatory adjustment during a 7 day microgravity simulation (6 deg head down tilt, HDT) [IAF PAPER 84-187] p 37 A85-13113
- BEDFORD, T. G.**  
Acute cardiorespiratory responses of hypertensive rats to swimming and treadmill exercise p 30 A85-14654
- BELAY, N.**  
Dinitrogen fixation by a thermophilic methanogenic bacterium p 34 A85-15433
- BELJAVSKAIA, N. A.**  
Possible mechanisms of cell adaptation to hypogravity [IAF PAPER 84-173] p 27 A85-13105
- BELOKRYLOVA, I. G.**  
X-ray diagnosis of disorders of the rib respiration mechanism p 42 A85-14949
- BERGGREN, W. A.**  
The Eocene/Oligocene boundary event in the deep sea p 34 A85-15597
- BERNAUER, E.**  
The role of physical and physiological capacities and their modification on the tolerance to various stress experienced by Air Force personnel [AD-A145779] p 43 N85-12550
- BES, A.**  
Interest of head down tilt to simulate the neurocirculatory modifications observed during space flight [IAF PAPER 84-190] p 37 A85-13115
- BLAKESLEE, M.**  
Cultivation and conversion of marine macroalgae [DE84-004522] p 35 N85-13464
- BLUME, F. D.**  
Weight loss and changes in body composition at high altitude p 40 A85-14667
- BODROV, V. A.**  
Psychological selection of pilots and cosmonauts p 45 A85-13749
- BOEV, M.**  
Influence of continuous hypo- and hyperkinesia on EEG-rhythms in the range of 0.5 to 35 Hz in rats p 28 A85-13462
- BOGOMOLOVA, L. S.**  
The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946
- BOLLENDONK, W. W.**  
Space Shuttle maneuvering unit design and operational activity - Solar max repair mission [IAF PAPER 84-160] p 47 A85-13095
- BONDARENKO, T. I.**  
The functional state of the cardiovascular system in the process of adaptation to the interaction of industrial factors p 41 A85-14939
- BONDE-PETERSEN, F.**  
The influence of lower body negative pressure (LBPN) upon circulating hormones - The effect of angiotensin blockade [IAF PAPER 84-175] p 36 A85-13107
- BOYER, S. J.**  
Weight loss and changes in body composition at high altitude p 40 A85-14667
- BRADLEY, M. E.**  
Pulmonary oxygen toxicity in awake dogs - Metabolic and physiological effects p 31 A85-14662
- BRAGINA, M. P.**  
Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563
- BREDIKIS, I. I.**  
Arrhythmias and conduction disturbances of the heart p 37 A85-13593
- BREEDING, R. E.**  
Space station life support systems - Status report [IAF PAPER 84-162] p 47 A85-13097

**BRIEGLEB, W.**

General configuration of the Spacelab Mission D1 Frog Statolith Experiment-STATEX  
[IAF PAPER 84-172] p 27 A85-13104

**BROOKS, G. A.**

Effects of age on metabolic responses to endurance training in rats p 31 A85-14657

**BROSE, H. F.**

Space station life support systems - Status report  
[IAF PAPER 84-162] p 47 A85-13097

**BROWN, C. F.**

The effect of sleep loss on high intensity exercise and recovery p 38 A85-13618

**BUDKO, K. P.**

Thermoresponses of the brain to sensory stimulation p 33 A85-14912

**BURLAKOVA, E. B.**

The effect of antioxidants on changes in lipid content in rat liver following thermal burn p 32 A85-14749

**BUSH, W. H.**

Spacelab 1 and the Life Sciences Flight Experiments Program  
[IAF PAPER 84-183] p 28 A85-13111

**BUTCHENKO, L. A.**

Sports medicine p 37 A85-13594

**C****CAREN, L. D.**

The unresponsiveness of the immune system of the rat to hypergravity p 28 A85-13613  
The immune system - Effects of hypergravity and hypogravity p 29 A85-13624

**CARPENTER, P. A.**

Cognitive coordinate systems: Accounts of mental rotation and individual differences in spatial ability  
[AD-A146149] p 46 A85-12557

**CHAMBERS, M. M. C.**

Sleep of shiftworkers within the Arctic Circle p 38 A85-13617

**CHANG, Y. N.**

Application of the compartmentalization/airlock concept to aircraft and tolerance of lung to rapid decompression p 29 A85-13615

**CHAPPARD, D.**

Influence of immobilization and weightlessness on bone tissue  
[IAF PAPER 84-177] p 27 A85-13109

**CHARYEV, M. CH.**

Circulation among healthy residents of the arid zone of Turkmenia. II - Rationed exercise in subjects with good and inadequate adaptation to high environmental temperatures p 41 A85-14933

**CHERESHAROV, L. P.**

Influence of continuous hypo- and hyperkinesia on EEG-rhythms in the range of 0.5 to 35 Hz in rats p 28 A85-13462

**CHERNIACK, N. S.**

Effects of CO<sub>2</sub> and bronchoconstriction on costal and crural diaphragm electromyograms p 30 A85-14656

**CHERNIAK, B. A.**

Tolerance for physical load and some characteristics of hemodynamic support in healthy subjects as a function of hemodynamic type p 41 A85-14935

**CHERNIGOVSKAIA, S. V.**

Variation in blood lipid levels and the prevalence of hyperproteinemia in a group of men aged 40-59 years engaged in strenuous mental activity (A repeated examination) p 41 A85-14934

**CHIDZHAVADZE, E. O.**

The effect of the partial deprivation of slow-wave sleep on the sleep-wakefulness cycle p 28 A85-13300

**CHOGOVADZE, A. V.**

Sports medicine p 37 A85-13594

**CHRISTENSEN, N. J.**

The influence of lower body negative pressure (LBNP) upon circulating hormones - The effect of angiotensin blockade  
[IAF PAPER 84-175] p 36 A85-13107

**CHUDILOVSKII, S. K.**

Short-term active orthostatic test in combination with blood deposition in the lower extremities p 40 A85-14822

**CLARK, R. S.**

Spacelab 1 and the Life Sciences Flight Experiments Program  
[IAF PAPER 84-183] p 28 A85-13111

**COCKERHAM, L. G.**

Canine postirradiation histamine levels and subsequent response to Compound 48/80 p 29 A85-13620

**COHN, S. H.**

Non-invasive techniques for determining musculoskeletal body composition  
[DE84-015718] p 44 A85-13470

**COMER, K.**

Human reliability data bank: Feasibility study  
[DE84-015215] p 51 A85-13476

**CONVERTINO, V. A.**

VO<sub>2</sub> kinetics of constant-load exercise following bed-rest-induced deconditioning p 40 A85-14665

**CORLISS, B. H.**

The Eocene/Oligocene boundary event in the deep sea p 34 A85-15597

**D****DANIELS, L.**

Dinitrogen fixation by a thermophilic methanogenic bacterium p 34 A85-15433

**DANNENBERG, T.**

Related and unrelated changes in response to exercise and cold in rats - A reevaluation p 31 A85-14663

**DAVIES, R. E.**

Investigation of claims for interstellar organisms and complex organic molecules p 51 A85-14523

**DEAL, E. C., JR.**

Effects of CO<sub>2</sub> and bronchoconstriction on costal and crural diaphragm electromyograms p 30 A85-14656

**DEBUSK, T. A.**

Cultivation and conversion of marine macroalgae  
[DE84-004522] p 35 A85-13464

**DEGTAREV, V. A.**

X-ray diagnosis of disorders of the rib respiration mechanism p 42 A85-14949

**DELLUVA, A. M.**

Investigation of claims for interstellar organisms and complex organic molecules p 51 A85-14523

**DEMBO, A. G.**

Disease and injury as a result of sports activities (2nd revised and enlarged edition) p 42 A85-15823

**DENISOV, E. I.**

A hygienic assessment of occupational noise and vibration p 49 A85-14425

**DEQUAE, P. A.**

Eye movements during sleep and EEG in zero-gravity  
[IAF PAPER 84-192] p 37 A85-13117

**DERIAGINA, G. P.**

The yearly rhythm of several indices of the blood coagulation system and lipid volume in healthy subjects and in patients with ischemic heart disease p 41 A85-14931

**DEVADATTA, P.**

Decrease in functional residual capacity during sleep in normal humans p 39 A85-14653

**DILLON, S. M.**

Mapping of mammalian arrhythmias with the cardiac laser scanner p 35 A85-12545

**DOLKAS, C. B.**

Causes of the triglyceride-lowering effect of exercise training in rats p 31 A85-14660

**DONLON, M. A.**

Canine postirradiation histamine levels and subsequent response to Compound 48/80 p 29 A85-13620

**DONNERMEYER, D.**

The effects of helicopter vibration on the spinal system  
[AD-A146274] p 50 A85-12562

**DONOVAN, M.**

Human reliability data bank: Feasibility study  
[DE84-015215] p 51 A85-13476

**DOYLE, T. F.**

Canine postirradiation histamine levels and subsequent response to Compound 48/80 p 29 A85-13620

**DUBINSKAIA, N. I.**

The effect of antioxidants on changes in lipid content in rat liver following thermal burn p 32 A85-14749

**DUFOR, P. A.**

Nutritional models for space travel from chemically defined diets  
[NASA-CR-3850] p 50 A85-12561

**DUNLAP, W. P.**

Investigation of fertility and in utero effects in rats chronically exposed to a high-intensity 60-Hz electric field p 29 A85-13820

**DUPUI, PH.**

Interest of head down tilt to simulate the neurocirculatory modifications observed during space flight  
[IAF PAPER 84-190] p 37 A85-13115

**DZIZINSKII, A. A.**

Tolerance for physical load and some characteristics of hemodynamic support in healthy subjects as a function of hemodynamic type p 41 A85-14935

**E****EBIHARA, Y.**

Origin of eye movements induced by high frequency rotation of the head p 29 A85-13621

**EFIMOVA, L. V.**

Seasonal readjustments of lipolytic processes and myocardial function in rabbits under conditions of homodynamic heart overstrain p 33 A85-14932

**ELMANN-LARSEN, B.**

The influence of lower body negative pressure (LBNP) upon circulating hormones - The effect of angiotensin blockade  
[IAF PAPER 84-175] p 36 A85-13107

**EMIRBEKOV, E. Z.**

Effect of hypothermia on metabolic processes in the brain p 33 A85-14875

**ENDERLE, J. D.**

The linear homeomorphic saccadic eye movement model - A modification p 49 A85-13822

**ENGLUND, C. E.**

Effect of physical work and sleep loss on recovery sleep  
[AD-A146082] p 43 A85-12554

**ERICKSON, R. A.**

The human operator and system effectiveness  
[AD-A146326] p 50 A85-12563

**ERMAKOV, P. N.**

Neurophysiological correlates for ideomotor stress in athletes p 42 A85-15565

**ESCOURROU, P.**

Hypoxemia increases plasma catecholamine concentrations in exercising humans p 40 A85-14664

**ESSER, P.**

Influence of physical training on insulin responses to glucose loads during bedrest (HDT 6 deg)  
[IAF PAPER 84-176] p 36 A85-13108

**F****FAIMAN, M. D.**

Mechanisms of oxygen toxicity and methods of protection  
[AD-A145830] p 43 A85-12551

**FANG, H. S.**

Application of the compartmentalization/airlock concept to aircraft and tolerance of lung to rapid decompression p 29 A85-13615

**FARMER, E. W.**

Personally factors in aviation p 46 A85-15173

**FEDOTCHENKO, A. A.**

Tolerance for physical load and some characteristics of hemodynamic support in healthy subjects as a function of hemodynamic type p 41 A85-14935

**FENNER, J. M.**

The Eocene/Oligocene boundary event in the deep sea p 34 A85-15597

**FINDEISEN, W.**

Deposition in the human lung during respiration of small particles suspended in the air  
[BLL-RISLEY-TR-5021-(9091.9)] p 42 A85-12549

**FINDL, E.**

Field/cell interaction model  
[DE84-011914] p 36 A85-13465

**FIRSOVA, P. P.**

X-ray diagnosis of disorders of the rib respiration mechanism p 42 A85-14949

**FOLPRECHT, R.**

'Plasma 01' - Appliance for human blood collection and processing during space flights  
[IAF PAPER 84-168] p 48 A85-13102

**FREI, M. R.**

Increased susceptibility to radiofrequency radiation due to pharmacological agents p 29 A85-13619

**FROLKIS, I. V.**

Aging of smooth-muscle cells of blood vessels p 33 A85-14950

**FROLOV, V. A.**

Seasonal readjustments of lipolytic processes and myocardial function in rabbits under conditions of homodynamic heart overstrain p 33 A85-14932

**G****GAINUTDINOV, M. KH.**

The effect of adrenaline and cAMP on the activity of a thermostable cytoplasmic inhibitor of Ca<sup>2+</sup> / ion transport across the mitochondrial membrane of the rat heart p 33 A85-14911

**GANELINA, I. E.**

The yearly rhythm of several indices of the blood coagulation system and lipid volume in healthy subjects and in patients with ischemic heart disease p 41 A85-14931

**GAPRINDASHVILI, T. G.**

A computer analysis of ECGs under physical load p 40 A85-14927

## GAUQUELIN, G.

Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise  
[IAF PAPER 84-174] p 36 A85-13106

## GAUTHIER, G. M.

Origin of eye movements induced by high frequency rotation of the head p 29 A85-13621

## GELFAND, I. M.

The cerebellum and the control of rhythmic movements p 34 A85-15819

## GERMASHEV, A. G.

Provision of female workers in hothouses with vitamins C, B1 and B2 p 42 A85-14945

## GHARIB, C.

Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise  
[IAF PAPER 84-174] p 36 A85-13106

Cardiovascular system and microgravity simulation and in-flight results  
[IAF PAPER 84-186] p 36 A85-13112

## GIL, J.

A morphometric study of the carotid body in chronically hypoxic rats p 31 A85-14659

## GLATMAN, L. I.

Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563

## GLEZER, G. A.

Circulation among healthy residents of the arid zone of Turkmenia. II - Rationed exercise in subjects with good and inadequate adaptation to high environmental temperatures p 41 A85-14933

## GODIK, E. E.

Thermoresponses of the brain to sensory stimulation p 33 A85-14912

## GOGOLITSYN, I. U. L.

Analysis of frequency variations of neuron discharges in the human brain during the single execution of psychological tests p 46 A85-14599

## GOLDWATER, D. J.

VO2 kinetics of constant-load exercise following bed-rest-induced deconditioning p 40 A85-14665

## GOLOVINA, T. N.

Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation p 33 A85-14913

## GORBACH, A. M.

Thermoresponses of the brain to sensory stimulation p 33 A85-14912

## GRANT, E. H.

Determination of bound water in biological tissue and energy dissipated in bound water by low level microwaves  
[AD-A143101] p 35 N85-12547

## GREEN, H. L.

Eye movements during sleep and EEG in zero-gravity  
[IAF PAPER 84-192] p 37 A85-13117

## GREEN, R.

Stress and accidents in aviation p 46 A85-15172

## GREGORY, R. A.

Job attitudes of Air Force Navigators p 45 A85-13443

## GRIFFITHS, L. D.

The first dedicated life sciences Spacelab mission  
[IAF PAPER 84-170] p 27 A85-13103

## GUELL, A.

Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise  
[IAF PAPER 84-174] p 36 A85-13106

Cardiovascular system and microgravity simulation and in-flight results  
[IAF PAPER 84-186] p 36 A85-13112

Interest of head down tilt to simulate the neurocirculatory modifications observed during space flight  
[IAF PAPER 84-190] p 37 A85-13115

## GULIAEV, I. U. V.

Thermoresponses of the brain to sensory stimulation p 33 A85-14912

## GUREVICH, M. I.

Aging of smooth-muscle cells of blood vessels p 33 A85-14950

## GUSENOVA, F. M.

Hemopoiesis in dogs during experiments with acute blood loss replaced by PFS emulsion in combination with polyglucine p 32 A85-14746

## GUSEV, O.

Rech-1 speech synthesizer for man-machine dialog p 51 N85-13456

## GVOZDENKO, L. A.

The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946

## H

## HALE, B.

Sleep-waking pattern and body temperature in hypoxia at selected ambient temperatures p 32 A85-14666

## HAMALAINEN, R. P.

Optimal control of inspiratory airflow in breathing p 50 A85-15807

## HARABIN, A. L.

Pulmonary oxygen toxicity in awake dogs - Metabolic and physiological effects p 31 A85-14662

## HARRI, M.

Related and unrelated changes in response to exercise and cold in rats - A reevaluation p 31 A85-14663

## HART, R. E.

Training and development of engineers at the Air Force Flight Test Center - An overview  
[AIAA PAPER 84-2528] p 45 A85-13587

## HAXHIU, M. A.

Effects of CO2 and bronchoconstriction on costal and crural diaphragm electromyograms p 30 A85-14656

## HEINMETS, F.

Increased susceptibility to radiofrequency radiation due to pharmacological agents p 29 A85-13619

## HELGESON, E. A.

Canine postprandial histamine levels and subsequent response to Compound 48/80 p 29 A85-13620

## HENRIKSEN, O.

The influence of lower body negative pressure (LBNP) upon circulating hormones - The effect of angiotensin blockade  
[IAF PAPER 84-175] p 36 A85-13107

## HERINGA, A.

Data reduction of body surface potential maps by means of orthogonal expansions p 49 A85-13821

## HESSE, B.

The influence of lower body negative pressure (LBNP) upon circulating hormones - The effect of angiotensin blockade  
[IAF PAPER 84-175] p 36 A85-13107

## HODGDON, J. A.

Effect of physical work and sleep loss on recovery sleep  
[AD-A146082] p 43 N85-12554

## HOHTOLA, E.

Related and unrelated changes in response to exercise and cold in rats - A reevaluation p 31 A85-14663

## HOIBERG, A.

Cardiovascular disease among U.S. Navy pilots  
[AD-A145871] p 43 N85-12552

Differences in health risks by aircraft model among US Navy pilots  
[AD-A146147] p 44 N85-12556

## HOMER, L. D.

Pulmonary oxygen toxicity in awake dogs - Metabolic and physiological effects p 31 A85-14662

## HORVATH, S. M.

Effects of age on metabolic responses to endurance training in rats p 31 A85-14657

## HSIEH, S. T.

Investigation of fertility and in utero effects in rats chronically exposed to a high-intensity 60-Hz electric field p 29 A85-13820

## HUDGEL, D. W.

Decrease in functional residual capacity during sleep in normal humans p 39 A85-14653

## HUNDAL, M.

The effects of helicopter vibration on the spinal system  
[AD-A146274] p 50 N85-12562

## I

## IANUSHKEVICHUS, Z. I.

Arrhythmias and conduction disturbances of the heart p 37 A85-13593

## ILINA, T. V.

Occupational aspects of hypertensive disease p 37 A85-13592

## ILNITSKII, V. I.

Echocardiograms of adolescent athletes p 40 A85-14928

## IOSAVA, K. V.

A computer analysis of ECGs under physical load p 40 A85-14927

## IUDIN, A. L.

Computer-aided tomography in cardiology. Communication I Methodology p 40 A85-14926

## IVANOVA, L. A.

Features of morphological changes in the adrenal glands of sexually immature white mice under the effect of an industrial-frequency electric field p 33 A85-14944

## IZMAILOVA, N. D.

The functional state of the cardiovascular system in the process of adaptation to the interaction of industrial factors p 41 A85-14939

## J

## JARSAILLO, E.

Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise  
[IAF PAPER 84-174] p 36 A85-13106

## JASPERS, S. R.

Atrophy and growth failure of rat hindlimb muscles in tail-cast suspension p 31 A85-14661

## JAUCHEM, J. R.

Increased susceptibility to radiofrequency radiation due to pharmacological agents p 29 A85-13619

## JOHNSON, D. G.

Hypoxemia increases plasma catecholamine concentrations in exercising humans p 40 A85-14664

## JUNK, P.

General configuration of the Spacelab Mission D1 Frog Statolith Experiment-STATEX  
[IAF PAPER 84-172] p 27 A85-13104

## JUST, M. A.

Cognitive coordinate systems: Accounts of mental rotation and individual differences in spatial ability  
[AD-A146149] p 46 N85-12557

## K

## KALNISH, V. V.

The performance of the operators of heat and electric power plants working 12-hour day and night shifts p 42 A85-14942

## KAPITANENKO, A. M.

Effect of several factors on the course and exacerbation of ischemic heart disease p 40 A85-14824

## KAPPAGODA, C. T.

Lack of effect of exercise of platelet activation and platelet reactivity p 39 A85-14855

## KARKHANIN, N. P.

The functional state of the cardiovascular system in the process of adaptation to the interaction of industrial factors p 41 A85-14939

## KARMANOVA, I. G.

Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation p 33 A85-14913

## KARTASHEV, A. G.

Features of morphological changes in the adrenal glands of sexually immature white mice under the effect of an industrial-frequency electric field p 33 A85-14944

## KASIAN, I. I.

Physiological investigations in weightlessness p 38 A85-13597

## KATS, L. N.

Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563

## KAUFMAN, L.

Visually evoked responses from non-occipital areas of the human cortex  
[AD-A146079] p 43 N85-12553

Evidence for multiple areas in the human auditory cortex  
[AD-A146086] p 43 N85-12555

## KAVTARADZE, V. G.

A computer analysis of ECGs under physical load p 40 A85-14927

## KAWAGUCHI, M.

A mathematical model of visual perception regarding peripheral vision and its application to the Hermann's illusion p 47 N85-13080

## KAZUEVA, T. V.

The possibility of using blood loss resistant rats in the study of the mechanisms for the maintenance of energy metabolism during prolonged sleep hypotension p 32 A85-14748

## KEIGWIN, L. D., JR.

The Eocene/Oligocene boundary event in the deep sea p 34 A85-15597

## KELLER, G.

The Eocene/Oligocene boundary event in the deep sea p 34 A85-15597

## KHOMUTETSKAIA, O. E.

Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation p 33 A85-14913

## L

- KHOROSHILOVA, E. V.**  
The formation of amino acids and their amides during the deformation of ammonium salts of carboxylic acids under high pressure p 52 A85-15949
- KHOVANSKAIA, T. P.**  
The effect of emotional stress on the system of hemostasis in patients with coronary atherosclerosis p 41 A85-14937
- KIRILLOVA, F. M.**  
Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563
- KITAJIMA, Y.**  
Architecture of dermatophyte cell Walls: Electron microscopic and biochemical analysis [NASA-TM-77441] p 35 N85-12546
- KITCHELL, J. A.**  
Periodicity of extinctions in the geologic past Deterministic versus stochastic explanations p 32 A85-14741
- KOCH, R. H.**  
Investigation of claims for interstellar organisms and complex organic molecules p 51 A85-14523
- KOGAN, A. B.**  
Neurophysiological correlates for ideomotor stress in athletes p 42 A85-15565
- KOLGANOV, A. V.**  
Hygienic significance of noise entropy p 49 A85-14941
- KONTUGANOV, N. N.**  
Hemopoiesis in dogs during experiments with acute blood loss replaced by PFS emulsion in combination with polyglucine p 32 A85-14746
- KORDIUM, E. L.**  
Possible mechanisms of cell adaptation to hypogravity [IAF PAPER 84-173] p 27 A85-13105
- KOROLEVA, V. A.**  
Clinical and physiological characteristics of the contact action of high-frequency ultrasound p 42 A85-14943
- KOROLEVA, V. I.**  
Investigation of intrinsic temperature fields connected with the excitation of the rat cerebral cortex p 28 A85-13458
- KOSOV, A. V.**  
The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946
- KOZARINOV, V. I.**  
'Plasma 01' - Appliance for human blood collection and processing during space flights [IAF PAPER 84-168] p 48 A85-13102
- KOZIARIN, I. P.**  
The distinctive features of the biological action of a low frequency electric field (50 Hz) on animals in various stages of ontogenesis p 33 A85-14940
- KRAVCHENKO, N. A.**  
The formation of amino acids and their amides during the deformation of ammonium salts of carboxylic acids under high pressure p 52 A85-15949
- KRUCHININA, N. A.**  
Variation in blood lipid levels and the prevalence of hyperproteinemia in a group of men aged 40-59 years engaged in strenuous mental activity (A repeated examination) p 41 A85-14934
- KRYZHANOVSKII, G. N.**  
The stable pathological state and the pathological system p 30 A85-14598
- KUKLIN, S. G.**  
Tolerance for physical load and some characteristics of hemodynamic support in healthy subjects as a function of hemodynamic type p 41 A85-14935
- KULIKOV, G. A.**  
Reflection of laterization of sound stimuli in evoked potentials of human brain p 44 N85-13463
- KULIKOVA, T. V.**  
The pharmacodynamics of a new Beta-blocker Corgard (Nadolol) in patients with stress angina p 41 A85-14938
- KURASHVILI, R. B.**  
A computer analysis of ECGs under physical load p 40 A85-14927
- KUSHNIRENKO, E. A.**  
Changes of the viscoelastic properties of muscles in seamen during voyages p 40 A85-14823
- KUZNETSOVA, G. D.**  
Investigation of intrinsic temperature fields connected with the excitation of the rat cerebral cortex p 28 A85-13458
- KVETNANSKY, R.**  
'Plasma 01' - Appliance for human blood collection and processing during space flights [IAF PAPER 84-168] p 48 A85-13102

- LAHIRI, S.**  
A morphometric study of the carotid body in chronically hypoxic rats p 31 A85-14659
- LASTOVCHENKO, V. B.**  
The performance of the operators of heat and electric power plants working 12-hour day and night shifts p 42 A85-14942
- LEKSINA, A. K.**  
The effect of exogenous cholinesterase on the lung surfactant system following massive blood loss p 32 A85-14747
- LEONARD, J. I.**  
The first dedicated life sciences Spacelab mission [IAF PAPER 84-170] p 27 A85-13103
- LEZHAVAL, M. G.**  
A computer analysis of ECGs under physical load p 40 A85-14927
- LIN, Y. C.**  
Isoproterenol infusion promotes nitrogen washout in rats under normobaric conditions p 30 A85-14652
- LIUOLIA, V. IU.**  
Effect of structural heterogeneity on the quantum yield of photosynthesis p 34 A85-15564
- LIUSOV, V. A.**  
An evaluation of central hemodynamics by computerized tetrapolar thoracic rheography p 40 A85-14929
- LOUNASMAA, O. V.**  
Visually evoked responses from non-occipital areas of the human cortex [AD-A146079] p 43 N85-12553
- LUCHENKO, M. B.**  
The effect of adrenaline and cAMP on the activity of a thermostable cytoplasmic inhibitor of Ca<sup>2+</sup>/ion transport across the mitochondrial membrane of the rat heart p 33 A85-14911
- LUKOSHIAVICHUTE, A. I.**  
Arrhythmias and conduction disturbances of the heart p 37 A85-13593
- LYOVA, S. P.**  
Effect of hypothermia on metabolic processes in the brain p 33 A85-14875
- LYMANGROVER, J. R.**  
Investigation of fertility and in utero effects in rats chronically exposed to a high-intensity 60-Hz electric field p 29 A85-13820

## M

- MACHO, L.**  
'Plasma 01' - Appliance for human blood collection and processing during space flights [IAF PAPER 84-168] p 48 A85-13102
- MACK, G. W.**  
Isoproterenol infusion promotes nitrogen washout in rats under normobaric conditions p 30 A85-14652
- MAISURADZE, L. M.**  
The effect of the partial deprivation of slow-wave sleep on the sleep-wakefulness cycle p 28 A85-13300
- MAJEAU-CHARGOIS, D.**  
Investigation of fertility and in utero effects in rats chronically exposed to a high-intensity 60-Hz electric field p 29 A85-13820
- MAKHOTINA, B. B.**  
A new form of artificial stable functional link of the human brain p 39 A85-14597
- MAKIN, V. B.**  
Psychological selection of pilots and cosmonauts p 45 A85-13749
- MALSKAR, P.**  
The influence of lower body negative pressure (LBNP) upon circulating hormones - The effect of angiotensin blockade [IAF PAPER 84-175] p 36 A85-13107
- MANDELBROJT, P.**  
Origin of eye movements induced by high frequency rotation of the head p 29 A85-13621
- MANT, M. J.**  
Lack of effect of exercise of platelet activation and platelet reactivity p 39 A85-14655
- MARCHETTI, E.**  
Origin of eye movements induced by high frequency rotation of the head p 29 A85-13621
- MARTSEVICH, S. IU.**  
The pharmacodynamics of a new Beta-blocker Corgard (Nadolol) in patients with stress angina p 41 A85-14938
- MASSABUAU, P.**  
Cardiovascular system and microgravity simulation and inflight results [IAF PAPER 84-186] p 36 A85-13112

- MAUROUX, J. L.**  
Interest of head down tilt to simulate the neurocirculatory modifications observed during space flight [IAF PAPER 84-190] p 37 A85-13115
- MAX, S. E.**  
Modulation of the cytosolic androgen receptor in striated muscle by sex steroids [NASA-CR-174173] p 44 N85-13468
- MAZZEO, R. S.**  
Effects of age on metabolic responses to endurance training in rats p 31 A85-14657
- MCGREGOR, K. H.**  
A morphometric study of the carotid body in chronically hypoxic rats p 31 A85-14659
- MCMURRAY, R. G.**  
The effect of sleep loss on high intensity exercise and recovery p 38 A85-13618
- MEDVEDEV, S. V.**  
A new form of artificial stable functional link of the human brain p 39 A85-14597
- MEDVEDEV, V. I.**  
Problem of controlling the functional condition in humans p 39 A85-14596
- MEGIRIAN, D.**  
Sleep-waking pattern and body temperature in hypoxia at selected ambient temperatures p 32 A85-14666
- METELITSKA, V. I.**  
The pharmacodynamics of a new Beta-blocker Corgard (Nadolol) in patients with stress angina p 41 A85-14938
- MILLER, D. P.**  
Human reliability data bank: Feasibility study [DE84-015215] p 51 N85-13476
- MINAIRE, P.**  
Influence of immobilization and weightlessness on bone tissue [IAF PAPER 84-177] p 27 A85-13109
- MIROLIUBO, A. V.**  
Problem of controlling the functional condition in humans p 39 A85-14596
- MISAKIAN, M.**  
Electrical parameters in 60-Hz biological exposure systems and their measurement: A primer [PB84-217793] p 35 N85-12548
- MOLE, P. A.**  
The role of physical and physiological capacities and their modification on the tolerance to various stress experienced by Air Force personnel [AD-A145779] p 43 N85-12550
- MOLOCHKINA, E. M.**  
The effect of antioxidants on changes in lipid content in rat liver following thermal burn p 32 A85-14749
- MONDON, C. E.**  
Causes of the triglyceride-lowering effect of exercise training in rats p 31 A85-14660
- MOROZ, A. F.**  
Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563
- MOZIN, V. A.**  
Establishing norms for human performance with allowance for medical and technical support p 42 A85-14948
- MUELLER, E. W.**  
Cardiocirculatory adjustment during a 7 day microgravity simulation (6 deg head down tilt, HDT) [IAF PAPER 84-187] p 37 A85-13113
- MURRAY, P. A.**  
Nitrogen fixation by a methanogenic archaeobacterium p 34 A85-15432
- MUSATENKO, L. I.**  
Possible mechanisms of cell adaptation to hypogravity [IAF PAPER 84-173] p 27 A85-13105
- MYHRE, G.**  
Sleep of shiftworkers within the Arctic Circle p 38 A85-13617

## N

- NADEL, E. R.**  
Effect of temperature and baroreceptor stimulation on reflex venomotor responses p 39 A85-14658
- NAITOH, P.**  
Effect of physical work and sleep loss on recovery sleep [AD-A146082] p 43 N85-12554
- NAKAYAMA, K.**  
Visual selective attention [AD-A146220] p 46 N85-12558
- NAVAKATIKIAN, A. O.**  
The performance of the operators of heat and electric power plants working 12-hour day and night shifts p 42 A85-14942

**NAZARENKO, V. A.**

The pharmacodynamics of a new Beta-blocker Corgard (Nadolol) in patients with stress angina p 41 A85-14938

**NDINGA, A.**

Reflection of lateralization of sound stimuli in evoked potentials of human brain p 44 N85-13463

**NEDUKHA, E. M.**

Possible mechanisms of cell adaptation to hypogravity [IAF PAPER 84-173] p 27 A85-13105

**NEKHAEV, A. S.**

Short-term active orthostatic test in combination with blood deposition in the lower extremities p 40 A85-14822

**NEMCHENKO, A. A.**

Changes of the viscoelastic properties of muscles in seamen during voyages p 40 A85-14823

**NEUBERT, J.**

General configuration of the Spacelab Mission D1 Frog Statolith Experiment-STATEX [IAF PAPER 84-172] p 27 A85-13104

**NEUZIL, J.**

'Plasma 01' - Appliance for human blood collection and processing during space flights [IAF PAPER 84-168] p 48 A85-13102

**NEWCOMER, L.**

Acute cardiorespiratory responses of hypertensive rats to swimming and treadmill exercise p 30 A85-14654

**NICHOLSON, A. N.**

Sleep of shiftworkers within the Arctic Circle p 38 A85-13617

**NICOGLOSSIAN, A.**

Assessment of medical risk in space flight [IAF PAPER 84-189] p 28 A85-13114

**NIELSEN, M. D.**

The influence of lower body negative pressure (LBPN) upon circulating hormones - The effect of angiotensin blockade [IAF PAPER 84-175] p 36 A85-13107

**NIKOLENKO, S. A.**

The pharmacodynamics of a new Beta-blocker Corgard (Nadolol) in patients with stress angina p 41 A85-14938

**NIKOLOV, N. D.**

Influence of continuous hypo- and hyperkinesia on EEG-rhythms in the range of 0.5 to 35 Hz in rats p 28 A85-13462

**NITTA, K.**

Concept study on the technology of CELSS [IAF PAPER 84-167] p 48 A85-13101

**NORMAN, T. N.**

The effect of exogenous cholinesterase on the lung surfactant system following massive blood loss p 32 A85-14747

**NOSKIN, A. D.**

'Plasma 01' - Appliance for human blood collection and processing during space flights [IAF PAPER 84-168] p 48 A85-13102

**NOVIKOVA, I. V.**

The effect of emotional stress on the system of hemostasis in patients with coronary atherosclerosis p 41 A85-14937

**NOY, S.**

Transdermal Therapeutic System Scopamine (TTSS), dimenhydrinate, and placebo - A comparative study at sea p 38 A85-13622

**NOZAWA, Y.**

Architecture of dermatophyte cell walls: Electron microscopic and biochemical analysis [NASA-TM-77441] p 35 N85-12546

**O****OERNHAGEN, H.**

Experiments with hydrox at 1.3 MPa (13 atm) [FOA-C-58014-H1] p 45 N85-13471

**OHNO, S.**

Repeats of base oligomers as the primordial coding sequences of the primeval earth and their vestiges in modern genes p 34 A85-15619

**OKSANEN-ROSSI, R.**

Related and unrelated changes in response to exercise and cold in rats - A reevaluation p 31 A85-14663

**OLCOTT, T. M.**

Life Sciences Research Facilities for a space station [IAF PAPER 84-161] p 47 A85-13096

**OLSHKEVICH, L. A.**

The effect of noise on the processing of information in connection with some aspects of neurodynamics p 46 A85-14947

**ONIANI, T. N.**

The effect of the partial deprivation of slow-wave sleep on the sleep-wakefulness cycle p 28 A85-13300

**ORLOVSKII, G. N.**

The cerebellum and the control of rhythmic movements p 34 A85-15819

**OSER, H.**

A survey of space biology and space medicine [ESA-BR-17] p 36 N85-13466

**OVCHINNIKOV, V. I.**

Computer-aided tomography in cardiology. Communication I Methodology p 40 A85-14926

**OVERMYER, S. P.**

The effect of redundant cues on retrieval time p 45 A85-12747

**OYAMA, J.**

The unresponsiveness of the immune system of the rat to hypergravity p 28 A85-13613

**OYAMA, T.**

A mathematical model of visual perception regarding peripheral vision and its application to the Hermann's illusion p 47 N85-13080

**P****PAKHOMOV, S. B.**

Analysis of frequency variations of neuron discharges in the human brain during the single execution of psychological tests p 46 A85-14599

**PARFENOV, A. S.**

An evaluation of central hemodynamics by computerized tetrapolar thoracic rheography p 40 A85-14929

**PARRISH, R. V.**

Pilot differences and motion cuing effects on simulated helicopter hover p 47 A85-12746

**PATAT, F.**

Cardiovascular system and microgravity simulation and inflight results [IAF PAPER 84-186] p 36 A85-13112

**PELIZZONE, M.**

Evidence for multiple areas in the human auditory cortex [AD-A146086] p 43 N85-12555

**PENA, D.**

Periodicity of extinctions in the geologic past Deterministic versus stochastic explanations p 32 A85-14741

**PERKINS, D.**

Effects of CO<sub>2</sub> and bronchoconstriction on costal and crural diaphragm electromyograms p 30 A85-14656

**PERRONE, J. A.**

Visual slant misperception and the 'black-hole' landing situation p 45 A85-13616

**PERRY, T. W.**

The first dedicated life sciences Spacelab mission [IAF PAPER 84-170] p 27 A85-13103

**PETKOV, G.**

Achievements in biology outlined p 35 N85-12213

**PETROV, A. V.**

Investigation of intrinsic temperature fields connected with the excitation of the rat cerebral cortex p 28 A85-13458

Thermoresponses of the brain to sensory stimulation p 33 A85-14912

**PILONCHERY, G.**

Influence of immobilization and weightlessness on bone tissue [IAF PAPER 84-177] p 27 A85-13109

**PLANEL, H.**

A survey of space biology and space medicine [ESA-BR-17] p 36 N85-13466

**PLEASANT, L. G.**

Space medicine research publications: 1983-1984 [NASA-CR-3860] p 44 N85-13469

**POKROVSKII, B. L.**

Psychological selection of pilots and cosmonauts p 45 A85-13749

**POLLARD, M. J.**

Sleep-waking pattern and body temperature in hypoxia at selected ambient temperatures p 32 A85-14666

**POOL, S.**

Assessment of medical risk in space flight [IAF PAPER 84-189] p 28 A85-13114

**POPE, M. H.**

The effects of helicopter vibration on the spinal system [AD-A146274] p 50 N85-12562

**POPOV, V. L.**

Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563

**POPOVA, D. I.**

Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation p 33 A85-14913

**POROSHENKO, A. B.**

Neurophysiological correlates for ideomotor stress in athletes p 42 A85-15565

**POTTIER, J. M.**

Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise [IAF PAPER 84-174] p 36 A85-13106

Cardiovascular system and microgravity simulation and inflight results [IAF PAPER 84-186] p 36 A85-13112

**POURCELOT, L.**

Cardiovascular system and microgravity simulation and inflight results [IAF PAPER 84-186] p 36 A85-13112

Interest of head down tilt to simulate the neurocirculatory modifications observed during space flight [IAF PAPER 84-190] p 37 A85-13115

**PRIMAK, V. N.**

The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946

**PROZOROVSKII, S. V.**

Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563

**PUCHKOVSKAIA, G. A.**

The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946

**PUTZKA, A.**

Effects of head down tilt (HDT) fluid volume shift on cerebral sensory responses [IAF PAPER 84-191] p 37 A85-13116

**Q****QUADENS, O.**

Eye movements during sleep and EEG in zero-gravity [IAF PAPER 84-192] p 37 A85-13117

**QUINLAN, J.**

Lack of effect of exercise of platelet activation and platelet reactivity p 39 A85-14655

**R****RABKIN, I. KH.**

Computer-aided tomography in cardiology. Communication I Methodology p 40 A85-14926

**RAMBAUT, P.**

Assessment of medical risk in space flight [IAF PAPER 84-189] p 28 A85-13114

**RANCE, N. E.**

Modulation of the cytosolic androgen receptor in striated muscle by sex steroids [NASA-CR-174173] p 44 N85-13468

**RASMUSSEN, S.**

The influence of lower body negative pressure (LBPN) upon circulating hormones - The effect of angiotensin blockade [IAF PAPER 84-175] p 36 A85-13107

**REAVEN, G. M.**

Causes of the triglyceride-lowering effect of exercise training in rats p 31 A85-14660

**REILLY, J. P.**

Human reactions to ELF (Extremely Low Frequency) electric and magnetic fields. An annotated bibliography of current literature, fourth edition [PB84-230358] p 45 N85-13472

**RIBAK, J.**

Transdermal Therapeutic System Scopamine (TTSS), dimenhydrinate, and placebo - A comparative study at sea p 38 A85-13622

**RICARD, G. L.**

Pilot differences and motion cuing effects on simulated helicopter hover p 47 A85-12746

**RIFFAT, G.**

Influence of immobilization and weightlessness on bone tissue [IAF PAPER 84-177] p 27 A85-13109

**ROMANOV, A.**

Impact of space medicine on Earth-based medicine: Academician Ye. I. Chazov comments on the work in orbit of physician O. Atkov p 44 N85-13458

**ROMANOVA, L. V.**

An evaluation of central hemodynamics by computerized tetrapolar thoracic rheography p 40 A85-14929

**ROSENBAACH, W. E.**

Job attitudes of Air Force Navigators p 45 A85-13443

**ROWELL, L. B.**

Hypoxemia increases plasma catecholamine concentrations in exercising humans p 40 A85-14664

**RUBINSKAIA, N. L.**

Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation p 33 A85-14913

- RUDIGER, C. E., JR.**  
Life Sciences Research Facilities for a space station  
[IAF PAPER 84-161] p 47 A85-13096
- RUMMEL, J. A.**  
The first dedicated life sciences Spacelab mission  
[IAF PAPER 84-170] p 27 A85-13103
- RYMAN, D. H.**  
Effect of physical work and sleep loss on recovery sleep  
[AD-A146082] p 43 N85-12554
- RYTHER, J. H.**  
Cultivation and conversion of marine macroalgae  
[DE84-004522] p 35 N85-13464

## S

- SALNIKOV, M. I.**  
The effect of the antioxidant dibutylol on the composition and intensity of peroxidation of blood lipids in patients with ischemic heart disease p 42 A85-15950
- SAMEL, A.**  
Cardiovascular adjustment during a 7 day microgravity simulation (6 deg head down tilt, HDT)  
[IAF PAPER 84-187] p 37 A85-13113
- SAMONSKI, F. H., JR.**  
The development status of candidate life support technology for a space station  
[IAF PAPER 84-165] p 48 A85-13099
- SANDLER, H.**  
VO<sub>2</sub> kinetics of constant-load exercise following bed-rest-induced deconditioning p 40 A85-14665
- SASSOLAS, A.**  
Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise  
[IAF PAPER 84-174] p 36 A85-13106
- SAVITSKAIA, S. E.**  
Some organizational aspects of work in open space of the Salyut-7 station crews p 48 A85-13286
- SCHATZ, A.**  
General configuration of the Spacelab Mission D1 Frog Statolith Experiment-STATEX  
[IAF PAPER 84-172] p 27 A85-13104
- SCHNEIDER, W.**  
Individual differences in automatic and controlled information processing  
[AD-A146245] p 46 N85-12559
- SCIBETTA, S. M.**  
The unresponsiveness of the immune system of the rat to hypergravity p 28 A85-13613
- SELEZNEV, S. A.**  
The possibility of using blood loss resistant rats in the study of the mechanisms for the maintenance of energy metabolism during prolonged sleep hypotension p 32 A85-14748
- SEREDENKO, M. M.**  
Results of study of hypoxia problems p 44 N85-13462
- SERGEV, V. N.**  
Microfossils in the petrified columnar stromatolites of the Upper Riphean of the Turukhansk region p 33 A85-14910
- SETO, Y. J.**  
Investigation of fertility and in utero effects in rats chronically exposed to a high-intensity 60-Hz electric field p 29 A85-13820
- SEVERIN, G. I.**  
Space suits - Ten periods of extravehicular activity from the Salyut-7 space station p 48 A85-13284
- SHAPIRA, S.**  
Transdermal Therapeutic System Scopolamine (TTSS), dimenhydrinate, and placebo - A comparative study at sea p 38 A85-13622
- SHEVELEV, I. A.**  
The neurons of the visual cortex - Adaptivity and the dynamics of receptive fields p 30 A85-14628
- SHISHKINA, N. S.**  
Thermoresponses of the brain to sensory stimulation p 33 A85-14912
- SHI, X.**  
Effect of temperature and baroreceptor stimulation on reflex venomotor responses p 39 A85-14658
- SHIBANOV, G. P.**  
A quantitative evaluation of human activity in man-machine systems p 49 A85-13599
- SHILOV, V. M.**  
Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563
- SHISHKINA, N. S.**  
The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946
- SHITIKOV, M. M.**  
Effect of several factors on the course and exacerbation of ischemic heart disease p 40 A85-14824

- SHKARINOV, L. N.**  
A hygienic assessment of occupational noise and vibration p 49 A85-14425
- SHORTANOVA, T. KH.**  
Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation p 33 A85-14913
- SHPACHENKO, D. I.**  
Psychological selection of pilots and cosmonauts p 45 A85-13749
- SHVAIKO, I. I.**  
The distinctive features of the biological action of a low frequency electric field (50 Hz) on animals in various stages of ontogenesis p 33 A85-14940
- SIDORENKO, ZH. G.**  
The effect of noise on the processing of information in connection with some aspects of neurodynamics p 46 A85-14947
- SILANTEVA, N. K.**  
X-ray diagnosis of disorders of the rib respiration mechanism p 42 A85-14949
- SIMON, J. R.**  
The effect of redundant cues on retrieval time p 45 A85-12747
- SIMONOV, P. V.**  
Physiological investigations in weightlessness p 38 A85-13597
- SIPILA, A.**  
Optimal control of inspiratory airflow in breathing p 50 A85-15807
- SKOOG, A. I.**  
Life support system for European space station elements  
[IAF PAPER 84-164] p 48 A85-13098
- SLIMAN, N. A.**  
The effect of altitude on normal pulmonary function tests - A comparison between the Dead Sea area and Amman p 38 A85-13614
- SMIRNOV, V. M.**  
A new form of artificial stable functional link of the human brain p 39 A85-14597
- SMITH, H. W.**  
Airplane designer's checklist for occupant injury prevention  
[AIAA PAPER 84-2520] p 49 A85-13583
- SOKOLOV, E. I.**  
The effect of emotional stress on the system of hemostasis in patients with coronary atherosclerosis p 41 A85-14937
- SOKOLOV, E. N.**  
Variability of heart rhythm under information-processing loads p 39 A85-14600
- SOLBERG, J. L.**  
Space medicine research publications: 1983-1984  
[NASA-CR-3860] p 44 N85-13469
- SPARLING, R.**  
Dinitrogen fixation by a thermophilic methanogenic bacterium p 34 A85-15433
- STADEAGER, C.**  
The influence of lower body negative pressure (LBNP) upon circulating hormones - The effect of angiotensin blockade  
[IAF PAPER 84-175] p 36 A85-13107
- STANKUS, A. I.**  
Variability of heart rhythm under information-processing loads p 39 A85-14600
- STARZYKH, I. F.**  
Occupational aspects of hypertensive disease p 37 A85-13592
- STEPAN, L.**  
"Plasma 01" - Appliance for human blood collection and processing during space flights  
[IAF PAPER 84-168] p 48 A85-13102
- STOMONIAKOV, V. KH.**  
Influence of continuous hypo- and hyperkinesia on EEG-rhythms in the range of 0.5 to 35 Hz in rats p 28 A85-13462
- STONE, B. M.**  
Sleep of shiftworkers within the Arctic Circle p 38 A85-13617
- STOTT, S. F. D.**  
Eye movements during sleep and EEG in zero-gravity  
[IAF PAPER 84-192] p 37 A85-13117
- STUREK, M. L.**  
Acute cardiorespiratory responses of hypertensive rats to swimming and treadmill exercise p 30 A85-14654
- SUNDIN, U.**  
Related and unrelated changes in response to exercise and cold in rats - A reevaluation p 31 A85-14663
- SUPIN, A. IA.**  
Mechanisms of orientation selectivity of 'simple' and 'complex' neurons of the visual cortex and a model of the orientation-selective receptive field p 32 A85-14874

## T

- SUVOROV, G. A.**  
A hygienic assessment of occupational noise and vibration p 49 A85-14425
- SVERTSHEK, V. I.**  
Space suits - Ten periods of extravehicular activity from the Salyut-7 space station p 48 A85-13284
- SVIATOSLAVOVA, V. V.**  
Provision of female workers in hothouses with vitamins C, B1 and B2 p 42 A85-14945
- SYTNIK, K. M.**  
Possible mechanisms of cell adaptation to hypogravity  
[IAF PAPER 84-173] p 27 A85-13105
- TAIROV, O. P.**  
Reflection of laterization of sound stimuli in evoked potentials of human brain p 44 N85-13463
- TANENBAUM, R.**  
Visually evoked responses from non-occipital areas of the human cortex  
[AD-A146079] p 43 N85-12553
- TARASENKO, V. A.**  
Possible mechanisms of cell adaptation to hypogravity  
[IAF PAPER 84-173] p 27 A85-13105
- TARATORIN, A. M.**  
Investigation of intrinsic temperature fields connected with the excitation of the rat cerebral cortex p 28 A85-13458
- Thermoresponses of the brain to sensory stimulation** p 33 A85-14912
- TEPLOV, S. I.**  
The regulation of cerebral circulation p 30 A85-14123
- TESCH, P. A.**  
Muscle fiber type composition and G-tolerance p 38 A85-13612
- TIGLIEV, G. S.**  
The regulation of cerebral circulation p 30 A85-14123
- TIPTON, C. M.**  
Acute cardiorespiratory responses of hypertensive rats to swimming and treadmill exercise p 30 A85-14654
- TISCHLER, M. E.**  
Atrophy and growth failure of rat hindlimb muscles in tail-cast suspension p 31 A85-14661
- TOBEY, T.**  
Causes of the triglyceride-lowering effect of exercise training in rats p 31 A85-14660
- TODD, J. T.**  
The perception of three-dimensional structure from rigid and nonrigid motion p 46 A85-13909
- TRIPATHI, A.**  
Effect of temperature and baroreceptor stimulation on reflex venomotor responses p 39 A85-14658
- TRIUFANOV, V. F.**  
Variation in blood lipid levels and the prevalence of hyperproteinemia in a group of men aged 40-59 years engaged in strenuous mental activity (A repeated examination) p 41 A85-14934
- TSFASMAN, A. Z.**  
Occupational aspects of hypertensive disease p 37 A85-13592
- TSIKULIN, A. E.**  
Tolerance to dynamic and static physical stress in hypertensive patients p 41 A85-14930
- TSYKALOV, E. N.**  
Investigation of intrinsic temperature fields connected with the excitation of the rat cerebral cortex p 28 A85-13458
- Thermoresponses of the brain to sensory stimulation** p 33 A85-14912
- TURAKULOV, IA. KH.**  
The effect of adrenaline and cAMP on the activity of a thermostable cytoplasmic inhibitor of Ca<sup>2+</sup>/I<sup>+</sup> ion transport across the mitochondrial membrane of the rat heart p 33 A85-14911

## U

- UGRIUMOV, V. M.**  
The regulation of cerebral circulation p 30 A85-14123
- UIJEN, G. J. H.**  
Data reduction of body surface potential maps by means of orthogonal expansions p 49 A85-13821
- USAKOV, A. S.**  
"Plasma 01" - Appliance for human blood collection and processing during space flights  
[IAF PAPER 84-168] p 48 A85-13102
- USHAKOV, I. B.**  
Combined effect of nonuniform microwave (2.4 GHz) and gamma radiation on the blood-brain barrier in rats p 29 A85-13800

## V

- VALKUNSA, L. I.**  
Effect of structural heterogeneity on the quantum yield of photosynthesis p 34 A85-15564
- VAN LUNTEREN, E.**  
Effects of CO<sub>2</sub> and bronchoconstriction on costal and crural diaphragm electromyograms p 30 A85-14656
- VAN OOSTEROM, A.**  
Data reduction of body surface potential maps by means of orthogonal expansions p 49 A85-13821
- VARONETSKAS, G. A.**  
Periodic respiration and disturbances in cardiac activity during sleep in patients with ischemic heart disease p 41 A85-14936
- VERCHER, J.-L.**  
Origin of eye movements induced by high frequency rotation of the head p 29 A85-13821
- VIGAS, M.**  
'Plasma 01' - Appliance for human blood collection and processing during space flights [IAF PAPER 84-168] p 48 A85-13102
- VINCENT, M.**  
Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise [IAF PAPER 84-174] p 36 A85-13106
- VLASOV, V. D.**  
Short-term active orthostatic test in combination with blood deposition in the lower extremities p 40 A85-14822
- VOITSEKHOVSKII, V. M.**  
The distinctive features of the biological action of a low frequency electric field (50 Hz) on animals in various stages of ontogenesis p 33 A85-14940
- VOLKOV, D. V.**  
Tolerance to dynamic and static physical stress in hypertensive patients p 41 A85-14930

## W

- WALKER, C. F.**  
Investigation of fertility and in utero effects in rats chronically exposed to a high-intensity 60-Hz electric field p 29 A85-13820
- WARBERG**  
The influence of lower body negative pressure (LBNP) upon circulating hormones - The effect of angiotensin blockade [IAF PAPER 84-175] p 36 A85-13107
- WEGMANN, H. M.**  
Influence of physical training on insulin responses to glucose loads during bedrest (HDT 6 deg) [IAF PAPER 84-176] p 36 A85-13108
- WENGER, B.**  
Effect of temperature and baroreceptor stimulation on reflex venomotor responses p 39 A85-14658
- WEST, J. B.**  
Hypoxic man - Lessons from extreme altitude (1984 Armstrong Lecture) p 39 A85-13623
- WHITE, R. J.**  
The first dedicated life sciences Spacelab mission [IAF PAPER 84-170] p 27 A85-13103
- WILDER, D. G.**  
The effects of helicopter vibration on the spinal system [AD-A146274] p 50 N85-12562
- WILLIAMSON, S. J.**  
Visually evoked responses from non-occipital areas of the human cortex [AD-A146079] p 43 N85-12553  
Evidence for multiple areas in the human auditory cortex [AD-A146086] p 43 N85-12555
- WOLFE, J. W.**  
The linear homeomorphic saccadic eye movement model - A modification p 49 A85-13822
- WRIGHT, B. D.**  
A hydroponic method for plant growth in microgravity [IAF PAPER 84-ST-05] p 28 A85-13292

## Y

- YAMANOI, T.**  
A mathematical model of visual perception regarding peripheral vision and its application to the Hermann's illusion p 47 N85-13080
- YAMASHITA, M.**  
Concept study on the technology of CELSS [IAF PAPER 84-167] p 48 A85-13101
- YAMAZAKI, T.**  
A mathematical model of visual perception regarding peripheral vision and its application to the Hermann's illusion p 47 N85-13080

## YATES, J. T.

- The linear homeomorphic saccadic eye movement model - A modification p 49 A85-13822

## Z

- ZABELA, P. V.**  
Arrhythmias and conduction disturbances of the heart p 37 A85-13593
- ZAETS, T. L.**  
The effect of antioxidants on changes in lipid content in rat liver following thermal burn p 32 A85-14749
- ZALOGUEV, S. N.**  
Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563
- ZELIAK, V. I.**  
The effect of exogenous cholinesterase on the lung surfactant system following massive blood loss p 32 A85-14747
- ZHADIN, M. N.**  
Biophysical mechanisms in the formation of electroencephalograms p 30 A85-14635
- ZHAROV, A. A.**  
The formation of amino acids and their amides during the deformation of ammonium salts of carboxylic acids under high pressure p 52 A85-15949
- ZHEMATITE, D. I.**  
Periodic respiration and disturbances in cardiac activity during sleep in patients with ischemic heart disease p 41 A85-14936
- ZHULIN, V. M.**  
The formation of amino acids and their amides during the deformation of ammonium salts of carboxylic acids under high pressure p 52 A85-15949
- ZHURAVLEVA, G. N.**  
Occupational aspects of hypertensive disease p 37 A85-13592
- ZILBINGER, A.**  
Transdermal Therapeutic System Scopolamine (TTSS), dimenhydrinate, and placebo - A comparative study at sea p 38 A85-13622
- ZINDER, S. H.**  
Nitrogen fixation by a methanogenic archaeobacterium p 34 A85-15432
- ZOTKINA, V. P.**  
Clinical and physiological characteristics of the contact action of high-frequency ultrasound p 42 A85-14943
- ZUEV, V. G.**  
Combined effect of nonuniform microwave (2.4 GHz) and gamma radiation on the blood-brain barrier in rats p 29 A85-13800

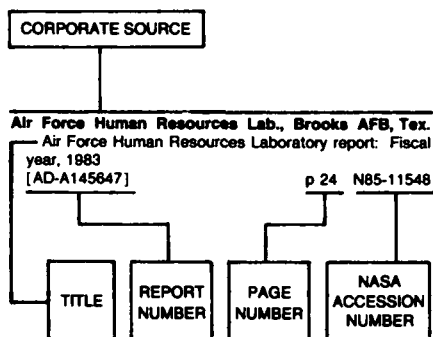


# CORPORATE SOURCE INDEX

AEROSPACE MEDICINE AND BIOLOGY / A Continuing Bibliography (Supplement 269)

MARCH 1985

## Typical Corporate Source Index Listing



Listings in this index are arranged alphabetically by corporate source. The title of the document is used to provide a brief description of the subject matter. The page number and the accession number are included in each entry to assist the user in locating the abstract in the abstract section. If applicable, a report number is also included as an aid in identifying the document.

## A

**Applied Physics Lab., Johns Hopkins Univ., Laurel, Md.**  
Human reactions to ELF (Extremely Low Frequency) electric and magnetic fields. An annotated bibliography of current literature, fourth edition  
[PB84-230358] p 45 N85-13472

### Arizona Univ., Tucson.

Atrophy and growth failure of rat hindlimb muscles in tail-cast suspension p 31 A85-14661  
VO<sub>2</sub> kinetics of constant-load exercise following bed-rest-induced deconditioning p 40 A85-14665

## B

### Brookhaven National Lab., Upton, N. Y.

Field/cell interaction model p 36 N85-13465  
[DE84-011914]  
Non-invasive techniques for determining musculoskeleton body composition p 44 N85-13470  
[DE84-015718]

## C

### California Univ., Davis.

The role of physical and physiological capacities and their modification on the tolerance to various stress experienced by Air Force personnel p 43 N85-12550  
[AD-A145779]

### Carnegie-Mellon Univ., Pittsburgh, Pa.

Cognitive coordinate systems: Accounts of mental rotation and individual differences in spatial ability p 46 N85-12557  
[AD-A146149]

### Committee on Commerce, Science, and Transportation (U. S. Senate).

Airliner cabin air quality p 50 N85-12560  
[S-REPT-98-468]

## E

### European Space Agency, Paris (France).

A survey of space biology and space medicine p 36 N85-13466  
[ESA-BR-17]

## G

### General Physics Corp., Columbia, Md.

Human reliability data bank: Feasibility study p 51 N85-13476  
[DE84-015215]

### George Washington Univ., Washington, D.C.

Nutritional models for space travel from chemically defined diets p 50 N85-12561  
[NASA-CR-3850]  
Space medicine research publications: 1983-1984 p 44 N85-13469  
[NASA-CR-3860]

## H

### Harbor Branch Foundation, Fort Pierce, Fla.

Cultivation and conversion of marine macroalgae p 35 N85-13464  
[DE84-004522]

### Hokkaido Univ., Sapporo (Japan).

A mathematical model of visual perception regarding peripheral vision and its application to the Hermann's illusion p 47 N85-13080

## I

### Illinois Univ., Champaign.

Individual differences in automatic and controlled information processing p 46 N85-12559  
[AD-A146245]

## J

### Joint Publications Research Service, Arlington, Va.

Achievements in biology outlined p 35 N85-12213  
USSR report: Life sciences. Biomedical and behavioral sciences p 35 N85-13453  
[JPRS-UBB-84-025]  
Climate-chamber experiments to improve pilots' work conditions p 50 N85-13454  
Machine Mechanics Institute builds walking vehicle p 51 N85-13455

Rech-1 speech synthesizer for man-machine dialog p 51 N85-13456

USSR report: Life Sciences: Biomedical and behavioral sciences p 35 N85-13457  
[JPRS-UBB-84-026]

Impact of space medicine on Earth-based medicine: Academician Ye. I. Chazov comments on the work in orbit of physician O. Atkov p 44 N85-13458

Results of study of hypoxia problems p 44 N85-13462

Reflection of laterization of sound stimuli in evoked potentials of human brain p 44 N85-13463

## K

### Kansas Univ., Lawrence.

Mechanisms of oxygen toxicity and methods of protection p 43 N85-12551  
[AD-A145830]

## M

### Management and Technical Services Co., Houston, Tex.

The first dedicated life sciences Spacelab mission p 27 A85-13103  
[IAF PAPER 84-170]

### Maryland Univ., College Park.

Modulation of the cytosolic androgen receptor in striated muscle by sex steroids p 44 N85-13468  
[NASA-CR-174173]

### McDonnell-Douglas Astronautics Co., Huntington Beach, Calif.

The human role in space. Volume 1: Executive summary p 51 N85-13473  
[NASA-CR-171223]

The human role in space. Volume 2: Research analysis and technology report p 51 N85-13474  
[NASA-CR-171224]

The human role in space. Volume 3: Generalizations on human roles in space p 51 N85-13475  
[NASA-CR-171225]

## N

### National Aeronautics and Space Administration, Washington, D. C.

The first dedicated life sciences Spacelab mission p 27 A85-13103  
[IAF PAPER 84-170]

Assessment of medical risk in space flight p 28 A85-13114  
[IAF PAPER 84-189]

Architecture of dermatophyte cell Walls: Electron microscopic and biochemical analysis p 35 N85-12546  
[NASA-TM-77441]

Aerospace Medicine and Biology, a continuing bibliography with indexes p 44 N85-13467  
[NASA-SP-7011(265)]

### National Aeronautics and Space Administration, Ames Research Center, Moffett Field, Calif.

The unresponsiveness of the immune system of the rat to hypergravity p 28 A85-13613

Visual slant misperception and the 'black-hole' landing situation p 45 A85-13616

Causes of the triglyceride-lowering effect of exercise training in rats p 31 A85-14660

VO<sub>2</sub> kinetics of constant-load exercise following bed-rest-induced deconditioning p 40 A85-14665

### National Aeronautics and Space Administration.

#### Lyndon B. Johnson Space Center, Houston, Tex.

The development status of candidate life support technology for a space station p 48 A85-13099  
[IAF PAPER 84-165]

Spacelab 1 and the Life Sciences Flight Experiments Program p 28 A85-13111  
[IAF PAPER 84-183]

### National Aeronautics and Space Administration.

#### Langley Research Center, Hampton, Va.

Pilot differences and motion cuing effects on simulated helicopter hover p 47 A85-12746

### National Bureau of Standards, Washington, D.C.

Electrical parameters in 60-Hz biological exposure systems and their measurement: A primer p 35 N85-12548  
[PB84-217793]

### Naval Health Research Center, San Diego, Calif.

Cardiovascular disease among U.S. Navy pilots p 43 N85-12552  
[AD-A145871]

Effect of physical work and sleep loss on recovery sleep p 43 N85-12554  
[AD-A146082]

Differences in health risks by aircraft model among US Navy pilots p 44 N85-12556  
[AD-A146147]

### Naval Training Equipment Center, Orlando, Fla.

Pilot differences and motion cuing effects on simulated helicopter hover p 47 A85-12746

### Naval Weapons Center, China Lake, Calif.

The human operator and system effectiveness p 50 N85-12563  
[AD-A146326]

### New York Univ., New York.

Visually evoked responses from non-occipital areas of the human cortex p 43 N85-12553  
[AD-A146079]

Evidence for multiple areas in the human auditory cortex p 43 N85-12555  
[AD-A146086]

## P

### Pennsylvania Univ., Philadelphia.

Mapping of mammalian arrhythmias with the cardiac laser scanner p 35 N85-12545

**Q**

**Queen Elizabeth Coll., London (England).**

Determination of bound water in biological tissue and energy dissipated in bound water by low level microwaves  
[AD-A143101] p 35 N85-12547

**R**

**Research Inst. of National Defence, Stockholm (Sweden).**

Experiments with hydrox at 1.3 MPa (13 atm)  
[FOA-C-58014-H1] p 45 N85-13471

**S**

**Santa Clara Univ., Calif.**

The unresponsiveness of the immune system of the rat to hypergravity p 28 A85-13613

**Smith-Kettlewell Inst. of Visual Sciences, San Francisco, Calif.**

Visual selective attention  
[AD-A146220] p 46 N85-12558

**Stanford Univ., Calif.**

Causes of the triglyceride-lowering effect of exercise training in rats p 31 A85-14660

**U**

**United Kingdom Atomic Energy Authority, Risley (England).**

Deposition in the human lung during respiration of small particles suspended in the air  
[BLL-RISLEY-TR-5021-(9091.9)] p 42 N85-12549

**V**

**Vermont Univ., Burlington.**

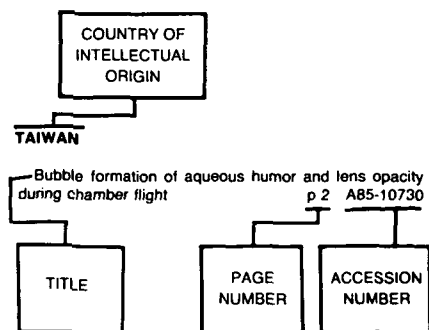
The effects of helicopter vibration on the spinal system  
[AD-A146274] p 50 N85-12562

# FOREIGN TECHNOLOGY INDEX

AEROSPACE MEDICINE AND BIOLOGY / A Continuing Bibliography (Supplement 269)

MARCH 1985

## Typical Foreign Technology Index Listing



Listings in this index are arranged alphabetically by country of intellectual origin. The title of the document is used to provide a brief description of the subject matter. The page number and the accession number are included in each entry to assist the user in locating the citation in the abstract section.

## A

### AUSTRALIA

Sleep-waking pattern and body temperature in hypoxia at selected ambient temperatures p 32 A85-14666

## B

### BELGIUM

Eye movements during sleep and EEG in zero-gravity [IAF PAPER 84-192] p 37 A85-13117

### BULGARIA

Influence of continuous hypo- and hyperkinesia on EEG-rhythms in the range of 0.5 to 35 Hz in rats p 28 A85-13462  
Achievements in biology outlined p 35 N85-12213

## C

### CANADA

Lack of effect of exercise of platelet activation and platelet reactivity p 39 A85-14655

### CZECHOSLOVAKIA

'Plasma 01' - Appliance for human blood collection and processing during space flights [IAF PAPER 84-168] p 48 A85-13102

## D

### DENMARK

The influence of lower body negative pressure (LBNP) upon circulating hormones - The effect of angiotensin blockade [IAF PAPER 84-175] p 36 A85-13107

## F

### FINLAND

Related and unrelated changes in response to exercise and cold in rats - A reevaluation p 31 A85-14663  
Optimal control of inspiratory airflow in breathing p 50 A85-15807

### FRANCE

Plasma vasopressin, renin activity and aldosterone during a 4-day head-down bed rest with and without exercise [IAF PAPER 84-174] p 36 A85-13106  
Influence of immobilization and weightlessness on bone tissue [IAF PAPER 84-177] p 27 A85-13109  
Cardiovascular system and microgravity simulation and in-flight results [IAF PAPER 84-186] p 36 A85-13112  
Interest of head down tilt to simulate the neurocirculatory modifications observed during space flight [IAF PAPER 84-190] p 37 A85-13115  
Origin of eye movements induced by high frequency rotation of the head p 29 A85-13621  
A survey of space biology and space medicine [ESA-BR-17] p 36 N85-13466

## G

### GERMANY, FEDERAL REPUBLIC OF

Life support system for European space station elements [IAF PAPER 84-164] p 48 A85-13098  
General configuration of the Spacelab Mission D1 Frog Statolith Experiment-STATX [IAF PAPER 84-172] p 27 A85-13104  
Influence of physical training on insulin responses to glucose loads during bedrest (HDT 6 deg) [IAF PAPER 84-176] p 36 A85-13108  
Cardiovascular adjustment during a 7 day microgravity simulation (6 deg head down tilt, HDT) [IAF PAPER 84-187] p 37 A85-13113  
Effects of head down tilt (HDT) fluid volume shift on cerebral sensory responses [IAF PAPER 84-191] p 37 A85-13116  
Deposition in the human lung during respiration of small particles suspended in the air [BLL-RISLEY-TR-5021-9091.9] p 42 N85-12549

## I

### ISRAEL

Transdermal Therapeutic System Scopolamine (TTSS), dimenhydrinate, and placebo - A comparative study at sea p 38 A85-13622

## J

### JAPAN

Concept study on the technology of CELSS [IAF PAPER 84-167] p 48 A85-13101  
Architecture of dermatophyte cell walls: Electron microscopic and biochemical analysis [NASA-TM-77441] p 35 N85-12546  
A mathematical model of visual perception regarding peripheral vision and its application to the Hermann's illusion p 47 N85-13080

### JORDAN

The effect of altitude on normal pulmonary function tests A comparison between the Dead Sea area and Amman p 38 A85-13614

## L

### LITHUANIA

Variability of heart rhythm under information-processing loads p 39 A85-14600  
Periodic respiration and disturbances in cardiac activity during sleep in patients with ischemic heart disease p 41 A85-14936

Effect of structural heterogeneity on the quantum yield of photosynthesis p 34 A85-15564

## N

### NETHERLANDS

Data reduction of body surface potential maps by means of orthogonal expansions p 49 A85-13821

### NORWAY

Sleep of shiftworkers within the Arctic Circle p 38 A85-13617

## S

### SWEDEN

Physical training and +Gz tolerance p 38 A85-13611  
Muscle fiber type composition and G-tolerance p 38 A85-13612  
Experiments with hydrox at 1.3 MPa (13 atm) [FOA-C-58014-H1] p 45 N85-13471

## T

### TAIWAN

Application of the compartmentalization/airlock concept to aircraft and tolerance of lung to rapid decompression p 29 A85-13615

## U

### U.S.S.R.

Possible mechanisms of cell adaptation to hypogravity [IAF PAPER 84-173] p 27 A85-13105  
Space suits - Ten periods of extravehicular activity from the Salyut-7 space station p 48 A85-13284  
Some organizational aspects of work in open space of the Salyut-7 station crews p 48 A85-13286  
The effect of the partial deprivation of slow-wave sleep on the sleep-wakefulness cycle p 28 A85-13300  
Investigation of intrinsic temperature fields connected with the excitation of the rat cerebral cortex p 28 A85-13458  
Occupational aspects of hypertensive disease p 37 A85-13592  
Arrhythmias and conduction disturbances of the heart p 37 A85-13593  
Sports medicine p 37 A85-13594  
Physiological investigations in weightlessness p 38 A85-13597  
A quantitative evaluation of human activity in man-machine systems p 49 A85-13599  
Psychological selection of pilots and cosmonauts p 45 A85-13749  
Combined effect of nonuniform microwave (2.4 GHz) and gamma radiation on the blood-brain barrier in rats p 29 A85-13800  
The regulation of cerebral circulation p 30 A85-14123  
A hygienic assessment of occupational noise and vibration p 49 A85-14425  
Problem of controlling the functional condition in humans p 39 A85-14596  
A new form of artificial stable functional link of the human brain p 39 A85-14597  
The stable pathological state and the pathological system p 30 A85-14598  
Analysis of frequency variations of neuron discharges in the human brain during the single execution of psychological tests p 46 A85-14599  
The neurons of the visual cortex - Adaptivity and the dynamics of receptive fields p 30 A85-14628  
Water-salt homeostasis in cases of circulatory insufficiency p 30 A85-14634  
Biophysical mechanisms in the formation of electroencephalograms p 30 A85-14635  
Hemopoiesis in dogs during experiments with acute blood loss replaced by PFS emulsion in combination with polyglucine p 32 A85-14746

FOREIGN

- The effect of exogenous cholinesterase on the lung surfactant system following massive blood loss p 32 A85-14747
- The possibility of using blood loss resistant rats in the study of the mechanisms for the maintenance of energy metabolism during prolonged sleep hypotension p 32 A85-14748
- The effect of antioxidants on changes in lipid content in rat liver following thermal burn p 32 A85-14749
- Short-term active orthostatic test in combination with blood deposition in the lower extremities p 40 A85-14822
- Changes of the viscoelastic properties of muscles in seamen during voyages p 40 A85-14823
- Effect of several factors on the course and exacerbation of ischemic heart disease p 40 A85-14824
- Mechanisms of orientation selectivity of 'simple' and 'complex' neurons of the visual cortex and a model of the orientation-selective receptive field p 32 A85-14874
- Effect of hypothermia on metabolic processes in the brain p 33 A85-14875
- Microfossils in the petrified columnar stromatolites of the Upper Riphean of the Turukhansk region p 33 A85-14910
- The effect of adrenaline and cAMP on the activity of a thermostable cytoplasmic inhibitor of  $\text{Ca}^{2+}$  / ion transport across the mitochondrial membrane of the rat heart p 33 A85-14911
- Thermoresponses of the brain to sensory stimulation p 33 A85-14912
- Protein and RNA contents in the neurons and glyocytes of the nucleus supraopticus hypothalami of the small Caucasian ground squirrel during hibernation p 33 A85-14913
- Computer-aided tomography in cardiology. Communication I Methodology p 40 A85-14926
- A computer analysis of ECGs under physical load p 40 A85-14927
- Echocardiograms of adolescent athletes p 40 A85-14928
- An evaluation of central hemodynamics by computerized tetrapolar thoracic rheography p 40 A85-14929
- Tolerance to dynamic and static physical stress in hypertensive patients p 41 A85-14930
- The yearly rhythm of several indices of the blood coagulation system and lipid volume in healthy subjects and in patients with ischemic heart disease p 41 A85-14931
- Seasonal readjustments of lipolytic processes and myocardial function in rabbits under conditions of homodynamic heart overstrain p 33 A85-14932
- Circulation among healthy residents of the arid zone of Turkmenia. II - Rationed exercise in subjects with good and inadequate adaptation to high environmental temperatures p 41 A85-14933
- Variation in blood lipid levels and the prevalence of hyperproteinemia in a group of men aged 40-59 years engaged in strenuous mental activity (A repeated examination) p 41 A85-14934
- Tolerance for physical load and some characteristics of hemodynamic support in healthy subjects as a function of hemodynamic type p 41 A85-14935
- The effect of emotional stress on the system of hemostasis in patients with coronary atherosclerosis p 41 A85-14937
- The pharmacodynamics of a new Beta-blocker Corgard (Nadolol) in patients with stress angina p 41 A85-14938
- The functional state of the cardiovascular system in the process of adaptation to the interaction of industrial factors p 41 A85-14939
- The distinctive features of the biological action of a low frequency electric field (50 Hz) on animals in various stages of ontogenesis p 33 A85-14940
- Hygienic significance of noise entropy p 49 A85-14941
- The performance of the operators of heat and electric power plants working 12-hour day and night shifts p 42 A85-14942
- Clinical and physiological characteristics of the contact action of high-frequency ultrasound p 42 A85-14943
- Features of morphological changes in the adrenal glands of sexually immature white mice under the effect of an industrial-frequency electric field p 33 A85-14944
- Provision of female workers in hothouses with vitamins C, B1 and B2 p 42 A85-14945
- The characteristic protective properties of material in workclothes from optical radiation from industrial sources p 50 A85-14946
- The effect of noise on the processing of information in connection with some aspects of neurodynamics p 46 A85-14947
- Establishing norms for human performance with allowance for medical and technical support p 42 A85-14948
- X-ray diagnosis of disorders of the rib respiration mechanism p 42 A85-14949
- Aging of smooth-muscle cells of blood vessels p 33 A85-14950
- Structural and functional changes in bacterial cells in space flight conditions p 34 A85-15563
- Neurophysiological correlatives for ideomotor stress in athletes p 42 A85-15565
- The cerebellum and the control of rhythmic movements p 34 A85-15819
- Disease and injury as a result of sports activities (2nd revised and enlarged edition) p 42 A85-15823
- The formation of amino acids and their amides during the deformation of ammonium salts of carboxylic acids under high pressure p 52 A85-15949
- The effect of the antioxidant dibunol on the composition and intensity of peroxidation of blood lipids in patients with ischemic heart disease p 42 A85-15950
- USSR report: Life sciences. Biomedical and behavioral sciences [JPRS-UBB-84-025] p 35 N85-13453
- Climate-chamber experiments to improve pilots' work conditions p 50 N85-13454
- Machine Mechanics Institute builds walking vehicle p 51 N85-13455
- Rech-1 speech synthesizer for man-machine dialog p 51 N85-13456
- USSR report: Life Sciences: Biomedical and behavioral sciences [JPRS-UBB-84-026] p 35 N85-13457
- Impact of space medicine on Earth-based medicine: Academician Ye. I. Chazov comments on the work in orbit of physician O. Atkov p 44 N85-13458
- Results of study of hypoxia problems p 44 N85-13462
- Reflection of laterization of sound stimuli in evoked potentials of human brain p 44 N85-13463

## UNITED KINGDOM

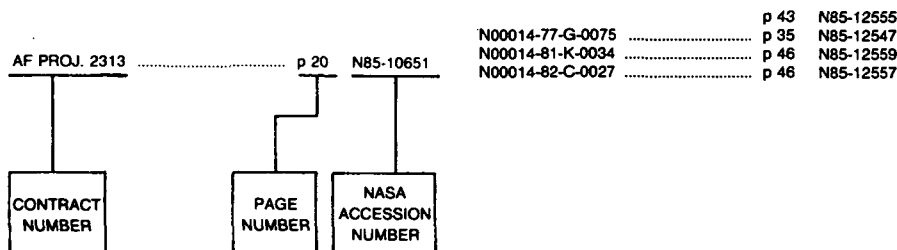
- Stress and accidents in aviation p 46 A85-15172
- Personality factors in aviation p 46 A85-15173

# CONTRACT NUMBER INDEX

AEROSPACE MEDICINE AND BIOLOGY / A Continuing Bibliography (Supplement 269)

MARCH 1985

## Typical Contract Number Index Listing



Listings in this index are arranged alphanumerically by contract number. Under each contract number, the accession numbers denoting documents that have been produced as a result of research done under that contract are arranged in ascending order with the AIAA accession numbers appearing first. The accession number denotes the number by which the citation is identified in the abstract section. Preceding the accession number is the page number on which the citation may be found.

|                              |      |           |
|------------------------------|------|-----------|
| AF PROJ. F58528              | p 44 | N85-12556 |
| AF-AFSR-0320-83              | p 46 | N85-12558 |
| AF-AFSR-3510-78              | p 43 | N85-12550 |
| AF-AFSR-83-0187              | p 49 | A85-13822 |
| DA PROJ. F58-528             | p 43 | N85-12554 |
| DA PROJ. 3E1-62777-A-878     | p 50 | N85-12562 |
| DAAG29-80-C-0041             | p 32 | A85-14741 |
| DAMD17-82-C-2153             | p 50 | N85-12562 |
| DE-AC02-76CH-00016           | p 36 | N85-13465 |
|                              | p 44 | N85-13470 |
| DE-AC02-83CH-10093           | p 35 | N85-13464 |
| DE-AC04-76DP-00789           | p 51 | N85-13476 |
| EA-77-A-01-6010              | p 35 | N85-12548 |
| F33615-80-C-0614             | p 29 | A85-13619 |
| MEF-10422/78/81              | p 31 | A85-14663 |
| MEF-9040/78/81               | p 31 | A85-14663 |
| MEF-9449/78/80               | p 31 | A85-14663 |
| NAGW-227                     | p 31 | A85-14661 |
| NAG2-100                     | p 44 | N85-13468 |
| NASW-3165                    | p 50 | N85-12561 |
|                              | p 44 | N85-13469 |
| NASW-3542                    | p 35 | N85-12546 |
| NASW-3676                    | p 27 | A85-13103 |
| NAS8-35611                   | p 51 | N85-13473 |
|                              | p 51 | N85-13474 |
|                              | p 51 | N85-13475 |
| NAS9-15850                   | p 27 | A85-13103 |
| NAVY TASK M0099, PN01C, 0010 | p 31 | A85-14662 |
| NHMRC-83/03/0                | p 32 | A85-14666 |
| NHMRC-83/0550                | p 32 | A85-14666 |
| NIH-AG-00073-05              | p 31 | A85-14657 |
| NIH-AL-15620                 | p 34 | A85-15619 |
| NIH-AM-25318                 | p 40 | A85-14664 |
| NIH-AM-28647                 | p 31 | A85-14661 |
| NIH-GM-30868                 | p 34 | A85-15433 |
| NIH-HL-07288                 | p 30 | A85-14656 |
| NIH-HL-08506                 | p 31 | A85-14660 |
| NIH-HL-08899                 | p 31 | A85-14659 |
| NIH-HL-16910                 | p 40 | A85-14664 |
| NIH-HL-17732                 | p 39 | A85-14658 |
| NIH-HL-19737                 | p 31 | A85-14659 |
| NIH-HL-20634                 | p 39 | A85-14658 |
| NIH-HL-25830                 | p 30 | A85-14656 |
| NIH-HL-26676                 | p 31 | A85-14659 |
| NOAA-NA-81AAD00070           | p 30 | A85-14652 |
| NSC-72-0412-B002-22          | p 29 | A85-13615 |
| NSF BSR-83-07099             | p 32 | A85-14741 |
| NSF OCE-80-008879            | p 34 | A85-15597 |
| NSF PCM-82-07809             | p 34 | A85-15433 |
| N00014-75-C-0160             | p 43 | N85-12551 |
| N00014-76-C-0568             | p 43 | N85-12553 |

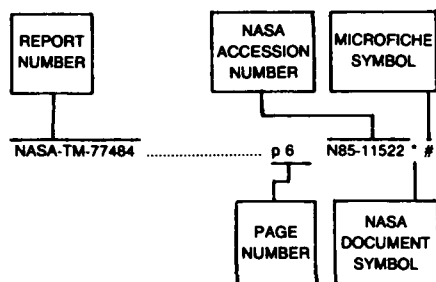
CONTRACT

# REPORT NUMBER INDEX

AEROSPACE MEDICINE AND BIOLOGY / A Continuing Bibliography (Supplement 269)

MARCH 1985

## Typical Report Number Index Listing



Listings in this index are arranged alphanumerically by report number. The page number indicates the page on which the citation is located. The accession number denotes the number by which the citation is identified. An asterisk (\*) indicates that the item is a NASA report. A pound sign (#) indicates that the item is available on microfiche.

AD-A143101 ..... p 35 N85-12547 #  
 AD-A145779 ..... p 43 N85-12550 #  
 AD-A145830 ..... p 43 N85-12551 #  
 AD-A145871 ..... p 43 N85-12552 #  
 AD-A146079 ..... p 43 N85-12553 #  
 AD-A146082 ..... p 43 N85-12554 #  
 AD-A146086 ..... p 43 N85-12555 #  
 AD-A146147 ..... p 44 N85-12556 #  
 AD-A146149 ..... p 46 N85-12557 #  
 AD-A146220 ..... p 46 N85-12558 #  
 AD-A146245 ..... p 46 N85-12559 #  
 AD-A146274 ..... p 50 N85-12562 #  
 AD-A146326 ..... p 50 N85-12563 #  
  
 AD-E000599 ..... p 43 N85-12555 #  
 AD-E500670 ..... p 35 N85-12547 #  
 AD-E750896 ..... p 46 N85-12559 #  
  
 AFOSR-84-0774TR ..... p 46 N85-12558 #  
 AFOSR-84-0787TR ..... p 43 N85-12550 #  
  
 AIAA PAPER 84-2438 ..... p 49 A85-13532 #  
 AIAA PAPER 84-2520 ..... p 49 A85-13583 #  
 AIAA PAPER 84-2528 ..... p 45 A85-13587 #  
  
 BLL-RISLEY-TR-5021-(9091.9F) .. p 42 N85-12549 #  
  
 BNL-34729 ..... p 36 N85-13465 #  
 BNL-35046 ..... p 44 N85-13470 #  
  
 CONF-8404180-1 ..... p 44 N85-13470 #  
 CONF-840966-1 ..... p 36 N85-13465 #  
 CONF-841099-2 ..... p 51 N85-13476 #  
  
 DE84-004522 ..... p 35 N85-13464 #  
 DE84-011914 ..... p 36 N85-13465 #  
 DE84-015215 ..... p 51 N85-13476 #  
 DE84-015718 ..... p 44 N85-13470 #  
  
 DR-4-VOL-1 ..... p 51 N85-13473 \* #  
 DR-4-VOL-2 ..... p 51 N85-13474 \* #  
 DR-4-VOL-3 ..... p 51 N85-13475 \* #  
  
 ESA-BR-17 ..... p 36 N85-13466 #  
  
 FOA-C-58014-H1 ..... p 45 N85-13471 #  
  
 GPO-31-010 ..... p 50 N85-12560 #  
  
 HARL-ONR-8401 ..... p 46 N85-12559 #  
  
 IAF PAPER 84-ST-05 ..... p 28 A85-13292 #  
 IAF PAPER 84-160 ..... p 47 A85-13095 #  
 IAF PAPER 84-161 ..... p 47 A85-13096 #  
 IAF PAPER 84-162 ..... p 47 A85-13097 #

IAF PAPER 84-164 ..... p 48 A85-13098 #  
 IAF PAPER 84-165 ..... p 48 A85-13099 \* #  
 IAF PAPER 84-167 ..... p 48 A85-13101 #  
 IAF PAPER 84-168 ..... p 48 A85-13102 #  
 IAF PAPER 84-170 ..... p 27 A85-13103 \* #  
 IAF PAPER 84-172 ..... p 27 A85-13104 #  
 IAF PAPER 84-173 ..... p 27 A85-13105 #  
 IAF PAPER 84-174 ..... p 36 A85-13106 #  
 IAF PAPER 84-175 ..... p 36 A85-13107 #  
 IAF PAPER 84-176 ..... p 36 A85-13108 #  
 IAF PAPER 84-177 ..... p 27 A85-13109 #  
 IAF PAPER 84-183 ..... p 28 A85-13111 \* #  
 IAF PAPER 84-186 ..... p 36 A85-13112 #  
 IAF PAPER 84-187 ..... p 37 A85-13113 #  
 IAF PAPER 84-189 ..... p 28 A85-13114 \* #  
 IAF PAPER 84-190 ..... p 37 A85-13115 #  
 IAF PAPER 84-191 ..... p 37 A85-13116 #  
 IAF PAPER 84-192 ..... p 37 A85-13117 #  
  
 ISSN-0250-1589 ..... p 36 N85-13466 #  
 ISSN-0347-7665 ..... p 45 N85-13471 #  
  
 JPRS-UBB-84-025 ..... p 35 N85-13453 #  
 JPRS-UBB-84-026 ..... p 35 N85-13457 #  
  
 MDC-H1295-VOL-1 ..... p 51 N85-13473 \* #  
 MDC-H1295-VOL-2 ..... p 51 N85-13474 \* #  
 MDC-H1295-VOL-3 ..... p 51 N85-13475 \* #  
  
 NAS 1.15:77441 ..... p 35 N85-12546 \* #  
 NAS 1.21:7011(265) ..... p 44 N85-13467 \* #  
 NAS 1.26:171223 ..... p 51 N85-13473 \* #  
 NAS 1.26:171224 ..... p 51 N85-13474 \* #  
 NAS 1.26:171225 ..... p 51 N85-13475 \* #  
 NAS 1.26:174173 ..... p 44 N85-13468 \* #  
 NAS 1.26:3850 ..... p 50 N85-12561 \* #  
 NAS 1.26:3860 ..... p 44 N85-13469 \* #  
  
 NASA-CR-171223 ..... p 51 N85-13473 \* #  
 NASA-CR-171224 ..... p 51 N85-13474 \* #  
 NASA-CR-171225 ..... p 51 N85-13475 \* #  
 NASA-CR-174173 ..... p 44 N85-13468 \* #  
 NASA-CR-3850 ..... p 50 N85-12561 \* #  
 NASA-CR-3860 ..... p 44 N85-13469 \* #  
  
 NASA-SP-7011(265) ..... p 44 N85-13467 \* #  
  
 NASA-TM-77441 ..... p 35 N85-12546 \* #  
  
 NAVHLTHRSCHC-84-27 ..... p 43 N85-12552 #  
 NAVHLTHRSCHC-84-28 ..... p 44 N85-12556 #  
 NAVHLTHRSCHC-84-30 ..... p 43 N85-12554 #  
  
 NBS/TN-1191 ..... p 35 N85-12548 #  
  
 NWC-TP-6541 ..... p 50 N85-12563 #  
  
 PB84-217793 ..... p 35 N85-12548 #  
 PB84-230358 ..... p 45 N85-13472 #  
  
 PPSP/JHU/PPSE-T-30 ..... p 45 N85-13472 #  
  
 REPT-16 ..... p 43 N85-12553 #  
 REPT-18 ..... p 43 N85-12555 #  
  
 S-REPT-98-468 ..... p 50 N85-12560 #  
  
 SAND-84-1569C ..... p 51 N85-13476 #  
  
 SERI/STR-231-2360 ..... p 35 N85-13464 #  
  
 TR-84-1-ONR ..... p 46 N85-12557 #

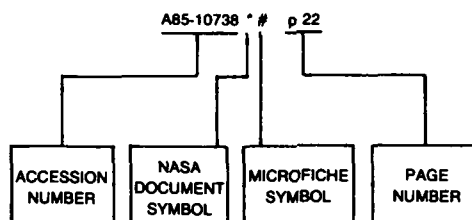
REPORT

# ACCESSION NUMBER INDEX

AEROSPACE MEDICINE AND BIOLOGY / A Continuing Bibliography (Supplement 269)

MARCH 1985

## Typical Accession Number Index Listing



Listings in this index are arranged alphanumerically by accession number. The page number listed to the right indicates the page on which the citation is located. An asterisk (\*) indicates that the item is a NASA report. A pound sign (#) indicates that the item is available on microfiche.

|               |      |               |      |
|---------------|------|---------------|------|
| A85-12746 * # | p 47 | A85-13821 #   | p 49 |
| A85-12747 #   | p 45 | A85-13822 #   | p 49 |
| A85-13095 #   | p 47 | A85-13909 #   | p 46 |
| A85-13096 #   | p 47 | A85-14123 #   | p 30 |
| A85-13097 #   | p 47 | A85-14425 #   | p 49 |
| A85-13098 #   | p 48 | A85-14523 #   | p 51 |
| A85-13099 * # | p 48 | A85-14596 #   | p 39 |
| A85-13101 #   | p 48 | A85-14597 #   | p 39 |
| A85-13102 #   | p 48 | A85-14598 #   | p 30 |
| A85-13103 * # | p 27 | A85-14599 #   | p 46 |
| A85-13104 #   | p 27 | A85-14600 #   | p 39 |
| A85-13105 #   | p 27 | A85-14628 #   | p 30 |
| A85-13106 #   | p 36 | A85-14634 #   | p 30 |
| A85-13107 #   | p 36 | A85-14635 #   | p 30 |
| A85-13108 #   | p 36 | A85-14652 #   | p 30 |
| A85-13109 #   | p 27 | A85-14653 #   | p 39 |
| A85-13111 #   | p 28 | A85-14654 #   | p 30 |
| A85-13112 #   | p 36 | A85-14655 #   | p 39 |
| A85-13113 #   | p 37 | A85-14656 #   | p 30 |
| A85-13114 * # | p 28 | A85-14657 #   | p 31 |
| A85-13115 #   | p 37 | A85-14658 #   | p 39 |
| A85-13116 #   | p 37 | A85-14659 #   | p 31 |
| A85-13117 #   | p 37 | A85-14660 * # | p 31 |
| A85-13284 #   | p 48 | A85-14661 * # | p 31 |
| A85-13286 #   | p 48 | A85-14662 #   | p 31 |
| A85-13292 #   | p 28 | A85-14663 #   | p 31 |
| A85-13300 #   | p 28 | A85-14664 #   | p 40 |
| A85-13443 #   | p 45 | A85-14665 * # | p 40 |
| A85-13458 #   | p 28 | A85-14666 #   | p 32 |
| A85-13462 #   | p 28 | A85-14667 #   | p 40 |
| A85-13532 #   | p 49 | A85-14741 #   | p 32 |
| A85-13583 #   | p 49 | A85-14746 #   | p 32 |
| A85-13587 #   | p 45 | A85-14747 #   | p 32 |
| A85-13592 #   | p 37 | A85-14748 #   | p 32 |
| A85-13593 #   | p 37 | A85-14749 #   | p 32 |
| A85-13594 #   | p 37 | A85-14822 #   | p 40 |
| A85-13597 #   | p 38 | A85-14823 #   | p 40 |
| A85-13599 #   | p 49 | A85-14824 #   | p 40 |
| A85-13611 #   | p 38 | A85-14874 #   | p 32 |
| A85-13612 #   | p 38 | A85-14875 #   | p 33 |
| A85-13613 * # | p 28 | A85-14910 #   | p 33 |
| A85-13614 #   | p 38 | A85-14911 #   | p 33 |
| A85-13615 #   | p 29 | A85-14912 #   | p 33 |
| A85-13616 #   | p 45 | A85-14913 #   | p 33 |
| A85-13617 #   | p 38 | A85-14926 #   | p 40 |
| A85-13618 #   | p 38 | A85-14927 #   | p 40 |
| A85-13619 #   | p 29 | A85-14928 #   | p 40 |
| A85-13620 #   | p 29 | A85-14929 #   | p 40 |
| A85-13621 #   | p 29 | A85-14930 #   | p 41 |
| A85-13622 #   | p 38 | A85-14931 #   | p 41 |
| A85-13623 #   | p 39 | A85-14932 #   | p 33 |
| A85-13624 #   | p 29 | A85-14933 #   | p 41 |
| A85-13749 #   | p 45 | A85-14934 #   | p 41 |
| A85-13800 #   | p 29 | A85-14935 #   | p 41 |
| A85-13820 #   | p 29 | A85-14936 #   | p 41 |

|             |      |
|-------------|------|
| A85-14937 # | p 41 |
| A85-14938 # | p 41 |
| A85-14939 # | p 41 |
| A85-14940 # | p 33 |
| A85-14941 # | p 49 |
| A85-14942 # | p 42 |
| A85-14943 # | p 42 |
| A85-14944 # | p 33 |
| A85-14945 # | p 42 |
| A85-14946 # | p 50 |
| A85-14947 # | p 46 |
| A85-14948 # | p 42 |
| A85-14949 # | p 42 |
| A85-14950 # | p 33 |
| A85-15172 # | p 46 |
| A85-15173 # | p 46 |
| A85-15432 # | p 34 |
| A85-15433 # | p 34 |
| A85-15563 # | p 34 |
| A85-15564 # | p 34 |
| A85-15565 # | p 42 |
| A85-15597 # | p 34 |
| A85-15619 # | p 34 |
| A85-15807 # | p 50 |
| A85-15819 # | p 34 |
| A85-15823 # | p 42 |
| A85-15949 # | p 52 |
| A85-15950 # | p 42 |

|               |      |
|---------------|------|
| N85-12213 #   | p 35 |
| N85-12545 #   | p 35 |
| N85-12546 * # | p 35 |
| N85-12547 #   | p 35 |
| N85-12548 #   | p 35 |
| N85-12549 #   | p 42 |
| N85-12550 #   | p 43 |
| N85-12551 #   | p 43 |
| N85-12552 #   | p 43 |
| N85-12553 #   | p 43 |
| N85-12554 #   | p 43 |
| N85-12555 #   | p 43 |
| N85-12556 #   | p 44 |
| N85-12557 #   | p 46 |
| N85-12558 #   | p 46 |
| N85-12559 #   | p 46 |
| N85-12560 #   | p 50 |
| N85-12561 * # | p 50 |
| N85-12562 #   | p 50 |
| N85-12563 #   | p 50 |
| N85-13080 #   | p 47 |
| N85-13453 #   | p 35 |
| N85-13454 #   | p 50 |
| N85-13455 #   | p 51 |
| N85-13456 #   | p 51 |
| N85-13457 #   | p 35 |
| N85-13458 #   | p 44 |
| N85-13462 #   | p 44 |
| N85-13463 #   | p 44 |
| N85-13464 #   | p 35 |
| N85-13465 #   | p 36 |
| N85-13466 #   | p 36 |
| N85-13467 * # | p 44 |
| N85-13468 * # | p 44 |
| N85-13469 * # | p 44 |
| N85-13470 #   | p 44 |
| N85-13471 #   | p 45 |
| N85-13472 #   | p 45 |
| N85-13473 * # | p 51 |
| N85-13474 * # | p 51 |
| N85-13475 * # | p 51 |
| N85-13476 #   | p 51 |



|   |  |  |                         |
|---|--|--|-------------------------|
| 1. Report No.<br>NASA SP-7011 (269)   | 2. Government Accession No.                          | 3. Recipient's Catalog No.                                 |                         |
| 4. Title and Subtitle<br>Aerospace Medicine and Biology<br>Continuing Bibliography (Supplement 269)   |  | 5. Report Date<br>March 1985                               |                         |
|   |  | 6. Performing Organization Code                            |                         |
| 7. Author(s)  |  | 8. Performing Organization Report No.                      |                         |
|   |  | 10. Work Unit No.  |                         |
| 9. Performing Organization Name and Address<br><br>National Aeronautics and Space Administration<br>Washington, D.C. 20546  |  | 11. Contract or Grant No.                                  |                         |
|   |  | 13. Type of Report and Period Covered                      |                         |
| 12. Sponsoring Agency Name and Address  |  | 14. Sponsoring Agency Code                                 |                         |
|   |  |  |                         |
| 15. Supplementary Notes   |  |  |                         |
| 16. Abstract<br><br><p style="text-align: center;">This bibliography lists 180 reports, articles and<br/>other documents introduced into the NASA scientific<br/>and technical information system in February 1985.</p> |  |  |                         |
| 17. Key Words (Suggested by Author(s))<br>Aerospace Medicine<br>Bibliographies<br>Biological Effects  |  | 18. Distribution Statement<br><br>Unclassified - Unlimited |                         |
| 19. Security Classif. (of this report)<br>Unclassified  | 20. Security Classif. (of this page)<br>Unclassified | 21. No. of Pages<br>68                                     | 22. Price*<br>\$7.00 HC |

## FEDERAL DEPOSITORY LIBRARY PROGRAM

The Federal Depository Library Program provides Government publications to designated libraries throughout the United States. The Regional Depository Libraries listed below receive and retain at least one copy of nearly every Federal Government publication, either in printed or microfilm form, for use by the general public. These libraries provide reference services and inter-library loans; however, they are *not* sales outlets. You may wish to ask your local library to contact a Regional Depository to help you locate specific publications, or you may contact the Regional Depository yourself.

### ARKANSAS STATE LIBRARY

One Capitol Mall  
Little Rock, AR 72201  
(501) 371-2326

### AUBURN UNIV. AT MONTGOMERY LIBRARY

Documents Department  
Montgomery, AL 36193  
(205) 279-9110, ext. 253

### UNIV. OF ALABAMA LIBRARY

Documents Dept.—Box S  
University, AL 35486  
(205) 348-7369

### DEPT. OF LIBRARY, ARCHIVES AND PUBLIC RECORDS

Third Floor—State Cap.  
1700 West Washington  
Phoenix, AZ 85007  
(602) 255-4121

### UNIVERSITY OF ARIZONA LIB.

Government Documents Dept.  
Tucson, AZ 85721  
(602) 626-5233

### CALIFORNIA STATE LIBRARY

Govt. Publications Section  
P.O. Box 2037  
Sacramento, CA 95809  
(916) 322-4572

### UNIV. OF COLORADO LIB.

Government Pub. Division  
Campus Box 184  
Boulder, CO 80309  
(303) 492-8834

### DENVER PUBLIC LIBRARY

Govt. Pub. Department  
1357 Broadway  
Denver, CO 80203  
(303) 571-2131

### CONNECTICUT STATE LIBRARY

Government Documents Unit  
231 Capitol Avenue  
Hartford, CT 06106  
(203) 566-4971

### UNIV. OF FLORIDA LIBRARIES

Library West  
Documents Department  
Gainesville, FL 32611  
(904) 392-0367

### UNIV. OF GEORGIA LIBRARIES

Government Reference Dept.  
Athens, Ga 30602  
(404) 542-8951

### UNIV. OF HAWAII LIBRARY

Govt. Documents Collection  
2550 The Mall  
Honolulu, HI 96822  
(808) 948-8230

### UNIV. OF IDAHO LIBRARY

Documents Section  
Moscow, ID 83843  
(208) 885-6344

### ILLINOIS STATE LIBRARY

Information Services Branch  
Centennial Building  
Springfield, IL 62706  
(217) 782-5185

### INDIANA STATE LIBRARY

Serials Documents Section  
140 North Senate Avenue  
Indianapolis, IN 46204  
(317) 232-3686

### UNIV. OF IOWA LIBRARIES

Govt. Documents Department  
Iowa City, IA 52242  
(319) 353-3318

### UNIVERSITY OF KANSAS

Doc. Collect.—Spencer Lib.  
Lawrence, KS 66045  
(913) 864-4662

### UNIV. OF KENTUCKY LIBRARIES

Govt. Pub. Department  
Lexington, KY 40506  
(606) 257-3139

### LOUISIANA STATE UNIVERSITY

Middleton Library  
Govt. Docs. Dept.  
Baton Rouge, LA 70803  
(504) 388-2570

### LOUISIANA TECHNICAL UNIV. LIBRARY

Documents Department  
Ruston, LA 71272  
(318) 257-4962

### UNIVERSITY OF MAINE

Raymond H. Fogler Library  
Tri-State Regional Documents  
Depository  
Orono, ME 04469  
(207) 581-1680

### UNIVERSITY OF MARYLAND

McKeldin Lib.—Doc. Div.  
College Park, MD 20742  
(301) 454-3034

### BOSTON PUBLIC LIBRARY

Government Docs. Dept.  
Boston, MA 02117  
(617) 536-5400 ext. 226

### DETROIT PUBLIC LIBRARY

Sociology Department  
5201 Woodward Avenue  
Detroit, MI 48202  
(313) 833-1409

### MICHIGAN STATE LIBRARY

P.O. Box 30007  
Lansing, MI 48909  
(517) 373-0640

### UNIVERSITY OF MINNESOTA

Government Pubs. Division  
409 Wilson Library  
309 19th Avenue South  
Minneapolis, MN 55455  
(612) 373-7813

### UNIV. OF MISSISSIPPI LIB.

Documents Department  
University, MS 38677  
(601) 232-5857

### UNIV. OF MONTANA

Mansfield Library  
Documents Division  
Missoula, MT 59812  
(406) 243-6700

### NEBRASKA LIBRARY COMM.

Federal Documents  
1420 P Street  
Lincoln, NE 68508  
(402) 471-2045  
In cooperation with University of  
Nebraska-Lincoln

### UNIVERSITY OF NEVADA LIB.

Govt. Pub. Department  
Reno, NV 89557  
(702) 784-6579

### NEWARK PUBLIC LIBRARY

5 Washington Street  
Newark, NJ 07101  
(201) 733-7812

### UNIVERSITY OF NEW MEXICO

Zimmerman Library  
Government Pub. Dept.  
Albuquerque, NM 87131  
(505) 277-5441

### NEW MEXICO STATE LIBRARY

Reference Department  
325 Don Gaspar Avenue  
Santa Fe, NM 87501  
(505) 827-2033, ext. 22

### NEW YORK STATE LIBRARY

Empire State Plaza  
Albany, NY 12230  
(518) 474-5563

### UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

Wilson Library  
BA/SS Documents Division  
Chapel Hill, NC 27515  
(919) 962-1321

### UNIVERSITY OF NORTH DAKOTA

Chester Fritz Library  
Documents Department  
Grand Forks, ND 58202  
(701) 777-2617, ext. 27  
(In cooperation with North  
Dakota State Univ. Library)

### STATE LIBRARY OF OHIO

Documents Department  
65 South Front Street  
Columbus, OH 43215  
(614) 462-7051

### OKLAHOMA DEPT. OF LIB.

Government Documents  
200 NE 18th Street  
Oklahoma City, OK 73105  
(405) 521-2502

### OKLAHOMA STATE UNIV. LIB.

Documents Department  
Stillwater, OK 74078  
(405) 624-6546

### PORTLAND STATE UNIV. LIB.

Documents Department  
P.O. Box 1151  
Portland, OR 97207  
(503) 229-3673

### STATE LIBRARY OF PENN.

Government Pub. Section  
P.O. Box 1601  
Harrisburg, PA 17105  
(717) 787-3752

### TEXAS STATE LIBRARY

Public Services Department  
P.O. Box 12927—Cap. Sta.  
Austin, TX 78753  
(512) 471-2996

### TEXAS TECH UNIV. LIBRARY

Govt. Documents Department  
Lubbock, TX 79409  
(806) 742-2268

### UTAH STATE UNIVERSITY

Merrill Library, U.M.C. 30  
Logan, UT 84322  
(801) 750-2682

### UNIVERSITY OF VIRGINIA

Alderman Lib.—Public Doc.  
Charlottesville, VA 22901  
(804) 924-3133

### WASHINGTON STATE LIBRARY

Documents Section  
Olympia, WA 98504  
(206) 753-4027

### WEST VIRGINIA UNIV. LIB.

Documents Department  
Morgantown, WV 26506  
(304) 293-3640

### MILWAUKEE PUBLIC LIBRARY

814 West Wisconsin Avenue  
Milwaukee, WI 53233  
(414) 278-3000

### ST. HIST. LIB. OF WISCONSIN

Government Pub. Section  
816 State Street  
Madison, WI 53706  
(608) 262-4347

### WYOMING STATE LIBRARY

Supreme Ct. & Library Bld.  
Cheyenne, WY 82002  
(307) 777-6344



National Aeronautics and  
Space Administration

Washington, D.C.  
20546

Official Business

Penalty for Private Use, \$300

THIRD-CLASS BULK RATE

Postage and Fees Paid  
National Aeronautics and  
Space Administration  
NASA-451



**NASA**

POSTMASTER: If Undeliverable (Section 158  
Postal Manual) Do Not Return

---